64 Well Files - EPU 80-D

East Poplar Oil Field
Enforcement Case

Release in Full

PRODUCTION DEPT
FILE COPY

EAST POPLAR UNIT WELL NO. 80

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

EPU SWD #3
Well #80

EPA ID# MTS21PE-0026
MTS2026-0026

EAST POPLAR UNIT WELL NO. 80

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

WELL HISTORY

WELL NO.:	East Poplar Unit No. 80
LOCATION:	SW NW Section 3, Township 28 North, Range 51 East
ELEVATION:	2059' Gr. = 2069' K.B.
DRLG. CONTRACTOR:	Zach Brooks Drilling Co.
STUDDED:	5:00 P.M., July 2, 1956. Rig released 6:30 P.M., July 26, 1956
COMP. CONTRACTOR:	Western Oil Well Service Co.
COMPLETED:	July 29, 1956
TOTAL DEPTH:	5823' Driller equals 5832' Schlumberger
CASING:	13 3/8" @ 161.39 with 175 sacks cement 9 5/8" @ 980.68 with 400 sacks cement 5 1/2" @ 5831.00 with 300 sacks cement
TUBING:	2 3/8" @ 5483.85'
PERFORATIONS:	"A-1" Zone from 5456'-5474'
PACKER:	None
ACID TREATMENT:	"A-1" Zone - 500 gallons etching acid
INITIAL POTENTIAL:	Pumping on 6-hour test through treater. 173 BFPD, 28% water (125 BOPD, 48 BWPD).
TYPE COMPLETION:	Single Producer in the "A-1" Zone

EAST POPLAR UNIT NO. 80-D

WELL HISTORY SUPPLEMENT

5-3-68 Moved in and rigged up pulling unit.

5-4-68 Laid down 3-1/2", 9.20#, J-55, internally coated tubing. Found 1 hole approximately 1" in diameter in 6th joint from top. The top 10 jts. had threads eaten and washed out. Packer was in set position and appeared to be in good condition. Ran 2-7/8" fiberglass tubing as follows:

1	3-1/2" O.D. 9.20#, J-55, Steel Non-EUE 10rd. thd. top X 8rd. thd. btm. internally plastic coated nipple.	10.70
1	3-1/2" 8rd. Non-EUE Steel Collar - Internally coated with plastic and doped internally with Epoxy	.35
1	3-1/2" 8rd. Non-EUE X 2-7/8" 8rd. EUe Fiberglass Change-Over nipple with I.D. of 1.90"	.30
107	jts. 2-7/8" Rock Island Fiberglass Tubing, 1.37#/ft., 8rd. EUE, medium heavy service, 1200# W.P.	3192.56
		3203.91
	Below RKB	6.50
	Landed At	3210.41

Injection pressure with 3-1/2" O.D. Steel tubing was 235 PSI. Injection pressure with 2-7/8" Fiberglass tubing (through 1.90" I.D. Change-over nipple) is 400 PSI.

Started injection through 2-7/8" fiberglass tubing 5-4-68.

SUPPLEMENT TO WELL HISTORY

EAST POPLAR UNIT NO. 80-D

JUSTIFICATION FOR WORKOVER:

Injection pressure increased too 600 PSI. Pump operating 24 hrs. per day to dispose of produced salt water. Acidized Dakota Sand perforations at 3218-3250', 3462-3512', and 3284-3410' to break any possible block in the perforations on the formation.

8-24-71 Acidized disposal well with 1500 gallons Dowell 15% HCL acid (15 XF) with 9 gallons A-160 inhibitor, and 8 gallons F-40, surface tension lowering agent. Injected acid into tubing at the rate of 2 BPM - 375 PSI and flushed with 2 bbls. salt water to clear pump and lines. Hooked up flowline and started injection pump. Pumped acid away and left station in operation.

Injection Pressure Before Acid Job	600 PSI
Injection Pressure After Acid Job	420 PSI

Pump operating approximately 18 hrs. per day.

EAST POPLAR UNIT NO. 80-D

SUPPLEMENT TO WELL HISTORY

10-2-71 This well was acidized with 2000 gallons of 28% HCL with inhibitor added, as follows:

Fifty bbls. of fresh water was injected ahead of 2000 gallons of acid and followed with 10 bbls. of fresh water. Injections rate was 2 BPM at 400 PSI. ISI was 0 PSI. Injection pump was then started to displace the acid into the formation.

Pressure Prior To Job	=	580 PSI
Pressure After Job	=	440 PSI

Injection pump went down 1 time more than usual on low water level over the past 24 hours.

EAST POPLAR UNIT NO. 80-D

SUPPLEMENT NO. 8

8-2-84 Move in rug up pulling unit.

8-3-84 Kill well with 10.1# water. Pump 35 barrels down tubing and 60 barrels down casing. Strip out of hole fiberglass tubing, couldn't unscrew tubing. Hack sawed tubing off in 60 joints. Pick up 6 joints tubing and 2½ x 5½ arrow set packer. Run 95 joints tubing coated internally with tube coat T-K 77. Circulate packer fluid down casing. Set packer, put well into production.

EAST POPLAR UNIT NO 80-D

SUPPLEMENT TO WELL HISTORY

September 10, 1998

Wait on truck to kill well. Rig up workover rig. Larkin nut on well head tight, get off, release packer, pull and tally tubing. Cap well off for night.

September 11, 1998

Hydrotest tubing into hole. Set packer and flange up well head. Found hole at 2883' and replaced 2 joints of 2-7/8" tubing. 95 joints tubing in the hole.

Perform Mechanical Integrity Test on well. Held pressure for 45 minutes. Well passed test.

EAST POPLAR UNIT NO. 80-D

5-4-99	*Unset packer and pull tubing out of the hole.*
5-5-99	*Hydrotest tubing, leaks at 31', 62', 93', 124', 155', and 217', set packer (Arrow Set with 10,000# set down). Fill backside, pressure up to 500 psi, held pressure OK. Also changed 1 collar*

Rec. Prod. APR 3 1986

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

MAR 27 1986

REF: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Al Simpson
Murphy Oil Corp.
200 Peach Street
El Dorado, Arkansas 71730

RE: UIC Final Permit
EPA # MTS21PE-0026
Well # EPU 80-D

Dear Mr. Simpson:

Enclosed is the Final Underground Injection Control Permit for the EPU 80-D well defined in your application referenced above. This well is located in the East Poplar Field, Roosevelt County, Montana.

The public comment period closed on February 21, 1986. The only comments received on the draft action were from Murphy Oil. All comments have been addressed and responses to specific comments may be found in the enclosed Responsiveness Summary. Please be aware that this permit becomes effective thirty days after the date of issuance and will remain effective for the life of the well, unless terminated. EPA will review this permit at least every five years.

If you have any questions please refer them to Angus M. Campbell at (303) 293-1420 or write to him at the above address.

Sincerely,

Max H. Dodson, Director
Water Management Division

Enclosures

EPU SWD #80
Flow Analyzer Model MC-II
Analyzer Serial #129641
Flow Meter Serial #15ST-34027
1½"

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

FEB 6 1989

Ref: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

Re: UNDERGROUND INJECTION CONTROL (UIC)
EPA Permit #MTS2026-0026
Murphy East Poplar Unit No. 80-D
SWNW Section 3-T28N-R51E
Roosevelt County, Montana

Dear Mr. Reede:

Your December 27, 1988 request for reducing the frequency of injected fluid analyses submissions for the referenced salt water disposal well is denied. This decision is based on Murphy Oil's failure to provide this office with four (4) consecutive quarterly chemical analyses of injected fluids for the East Poplar Unit No. 80-D.

We are currently in receipt of a chemical analysis dated November 29, 1988 for the East Poplar Unit No. 80-D. We will accept this November 29, 1988 chemical analysis as the first of four (4) consecutive quarterly fluid analyses as required by EPA Permit #MTS2026-0026. You may re-apply for the reduction of frequency in October 1989.

If you have any questions relative to this decision, please contact Emmett Schmitz at (303) 293-1717.

Sincerely

for Max H. Dodson
Director
Water Management Division

MURPHY
OIL CORPORATION

INTER-OFFICE CORRESPONDENCE

FROM: W. G. Brown — LOC.: Poplar-P&E — DATE: June 19, 1972

TO: A. W. Simpson — LOC.: El Dorado-P&E — CARBONS TO: File

SUBJECT: Wells Temporarily Abandoned

Enclosed you will find a list of wells in the East Poplar Unit that have been temporarily abandoned. Two, East Poplar Unit No. 8 and 89, of these wells should remain in the T.A. state in order to facilitate a salt water disposal system in the future if needed. The other wells will have to be plugged and cleaned up at some future date so this should be done while the company has an income in this area.

An A.F.E. is in to convert number 8 into a disposal well to take care of four South end batteries (D, R, K & H). East Poplar Unit No. 80-D would take care of the water from A, C, F, and G as it does now. In the event a high fluid withdrawal system is installed at East Poplar Unit No. 88 a disposal well may be needed at EPU "Q" battery, this would mean East Poplar Unit No. 89 would have to be made into a disposal well. Batteries B, E, I, J, L, M, N and P are being handled by East Poplar Unit No. 1-D. Number 2 salt water station could be reactivated if need be as the lines and wells are still intact.

From the above I don't believe any additional wells would be required for salt water disposal facilities other than the two mentioned. Unless your office or the engineering department has some use for these wells I believe they should be P&A'd and the locations cleaned up.

To the best of our knowledge the enclosed list is correct. Please advise as to your feelings on getting this work taken care of and I will proceed accordingly.

COPY

W. G. Brown

WGB/sb
enclosure

United States Department of the Interior

GEOLOGICAL SURVEY
Conservation Division
P.O. Box 2550
Billings, Montana 59103

March 29, 1977

Murphy Oil Corporation
P.O. Box 547
Poplar, Montana 59255

Re: NTL-2B Approval for Salt Water Disposal Wells in the Northeast Benrud Field, East Benrud Field, Volt Field and East Poplar Field, Roosevelt County, Montana

Gentlemen:

We have reviewed your applications concerning approval of the numerous disposal wells. Your applications meet the regulations required under NTL-2B, and approval is hereby given for the following disposal wells:

Mule Creek Allotted No.1-D, Fort Peck (Allotted) 35-009, SW SE, Sec. 20-31N-48E, 928' FSL and 2078' FEL, Northeast Benrud Field;

Wetsit No.1-D, Fort Peck (Allotted) [illegible]G 35-072, SW, Sec.36-31N-47E, 1740' FSL and 1740' FWL, East Benrud Field;

Courchene No.1-D, Fort Peck (Allotted) 35-035, SE SW, Sec.4-30N-46E, 801' FSL and 2034' FWL, Volt Field;

East Poplar Unit No.1-D, (Klies) #6104, SE SE SE, Sec.30-29N-51E, East Poplar Field;

East Poplar Unit No.80-D, I-37-IND-12914, SW NW, Sec.3-28N-51E, 1982' FNL and 761' FWL, East Poplar Field;

East Poplar Unit No.8-D, Fort Peck (Allotted) ---Patented, C NW SE, Sec.10-28N-51E, 1980' FSL and 1980' FEL, East Poplar Field;

East Poplar Unit No.5-D, I-37-IND-12856, SE SE, Sec.19-29N-51E, 1205' FSL and 660' FEL, East Poplar Field.

However, approval of the emergency pits that you are requesting cannot be given at this time. Each pit will be inspected individually by a staff member of this office. At the time of this inspection, each pit will be checked to see if it meets the criteria as stated under the section of NTL-2B that deals with emergency pits. We would like to remind you that all emergency pits are to be emptied of all fluids within 48 hours following their use. Each emergency use of the pits is to be reported to this office and approval is needed for the method of disposing of the fluid. Inspection of these pits will take place within 30 days. Also an emergency pit cannot be used as a trash pit.

Sincerely yours,

Virgil L. Pauli

Virgil L. Pauli
District Engineer

MURPHY
OIL USA, INC.

POST OFFICE BOX 547
POPLAR, MONTANA 59255

December 15, 1989

Mr. Max H. Dodson
Director, Water Management Division
United States Environmental Protection Agency
Region VIII
999 18th Street - Suite 500
Denver, Colorado 80202-2405

RE: UIC Permit #MTS2026-0026
East Poplar Unit No. 80-D

Dear Mr. Dodson:

Enclosed are four (4) consecutive quarterly water analyses for the East Poplar Unit 80-D, SW NW Section 3, T28N, R51E, Roosevelt County, Montana.

At this time we request a minor permit modification to reduce the frequency of water analysis to once per year to be submitted in the fourth quarter.

Sincerely,

Raymond Reede
District Manager

RR/jh

cc: A.W. Simpson
C.J. Boyter, Montana Operations
well file

SPUR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

JAN 25 1990

Ref: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
Post Office Box 547
Poplar, Montana 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
Monitoring of Injection Fluids
Salt Water Disposal Wells
Roosevelt County, Montana

Dear Mr. Reede:

In response to your recent requests to reduce the frequency of injection fluid analyses for the wells listed below, approval is hereby granted to submit fluid analyses annually, instead of on a quarterly basis. The only exception to this requirement is when there is a change in the source of injection fluids, in which case a water analysis is to be submitted to the Director within thirty (30) days.

WELL	EPA PERMIT NO.
Goings Government 1-D	MTS2008-0008
East Poplar Unit 80-D	MTS2026-0026
East Poplar Unit 8-D	MTS2023-0023
East Poplar Unit 1-D	MTS2022-0022
East Poplar Unit 5-D	MTS2021-0021
Lillian 1-D	MTS2035-0046

If you have any questions concerning this letter, you may contact John Carson at (303) 293-1435. Also, please direct all correspondence to the attention of John Carson at Mail Code 8WM-DW.

Sincerely,

Max H. Dodson
Director
Water Management Division

cc: Jim Boyter
Montana Office

MURPHY
OIL USA, INC.

POST OFFICE BOX 547
POPLAR, MONTANA 59255

December 31, 1990

Max H. Dodson, Director
Water Management Division
United States Environmental Agency
Region VIII - Suite 500
999 18th Street
Denver, CO 80202-2405

RE: Water Analyses for SWD

Dear Mr. Dodson:

Enclosed are the water analyses on the following salt water disposal wells:

East Poplar Unit 1-D	MTS2022-0022
East Poplar Unit 5-D	MTS2021-0021
East Poplar Unit 8-D	MTS2023-0023
East Poplar UNit 80-D	MTS2026-0026
Sletvold B-1	MTS2036-0047
-D	MTS2035-0046
D	MTS2302-0612
2-D	MTS2398-1768

Injection profile
or Tracer survey

2902
701-842-2902

Sincerely,

Raymond Reede
District Manager

SPUR

HALLIBURTON
LOGGING SERVICES, INC.

A Halliburton Company

March 25, 1991

Murphy Oil Corporation
P.O. Box 547
Poplar, MT 59255

Attn: Ray Reede

RE: Radioactive Tracer Evaluation, EPU #80D

Dear Ray:

Radioactive Tracer Logs were run on the EPU #80D well; East Poplar Field, Roosevelt County, Montana; to determine water injection profiles. The results of these logs are as follows:

> Perforations below 3,320' were covered with fill and accepting no fluid. From the bottom of the tailpipe at 3,295' fluid is being injected to a depth of 3,306'. From this point to bottom logged interval there is little or no fluid movement. Stationary checks were performed to verify no injected fluid was being placed in perforations at 3,218' to 3,250' and no fluid is channeling up behind the packer.

These interpretations are from log results dated 3/21/91 and will not apply to future well conditions.

Sincerely,

Robert S. Blackford

Robert S. Blackford
Sr. Sales Engineer

APPROVED
Date 5/14/91

Post Office Box 1454 • Williston, North Dakota 58802-1454 • 701/572-3759 • FAX 701/572-9441

MURPHY
OIL USA, INC.

POST OFFICE BOX 547
POPLAR, MONTANA 59255

March 26, 1991

Max H. Dodson, Director
Water Management Division
United States Environmental Protection Agency
Region VIII - Suite 500
999 18th Street
Denver, CO 80202-2405

RE: East Poplar Unit 80-D
EPA No. MTS2026-0026

Dear Mr. Dodson:

Our permit on East Poplar Unit 80-D states a tracer survey must be run on this well every 5 years. A tracer survey was run by Halliburton Logging Services on March 21, 1991. The copies of the Temperature Log and the Radioactive Tracer Log are enclosed, along with Halliburton's interpretations of the log.

Sincerely,

Raymond Reede
District Manager

RR/jh
enclosures

cc: Jim Boyter
Debi Madison
Paul Ramsey
Sidney Campbell
well file

SPUR

rec 6-13-91

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

JUN 7 1991

Ref: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
EPA Permit No. MT2026-00026
(Formerly Permit No. MT2026-0026)
East Poplar Unit No. 80-D
Roosevelt County, Montana

Dear Mr. Reede:

The Environmental Protection Agency's (EPA) Implementation Section has reviewed the March 21, 1991, Halliburton Radioactive Tracer Survey (RATS) and Differential Temperature Log (DTL). The conclusions of the EPA review group are that the logs, as submitted, do not satisfy Permit Condition Part II, Section C. 2. (a). (Page 6), which requires "... a radioactive tracer survey and a temperature differential log shall be run from a distance of at least 250 feet above the injection zone." Both logs stop considerably short of the required distance above the top perforation and, therefore, the LOGS MUST BE REPEATED.

It is also observed that the Differential Temperature Log does not have a temperature curve while the well is injecting. The required curve must be run at the normal operating pressure. Please include the surface temperature of the injected fluid.

The RAT survey shows fluid moving above the perforations at 3286 feet. On the new RATS log, have all passes overlay on the same base line, and include the depths up to 250 feet above the perforations on all runs.

Murphy Oil USA, Inc. must conduct a new RAT survey and run a new DTL log within ninety (90) days of receipt of this letter. If you have any questions in regard to this action, please contact Emmett Schmitz at (303) 293-1436. Please send all reports and correspondence to the ATTENTION: EMMETT SCHMITZ, citing MAIL CODE: 8WM-DW very prominently.

Sincerely,

Rick Clogsett for

Max H. Dodson, Director
Water Management Division

cc: Jim Boyter, MO

Debi Madison
Fort Peck Assiniboine & Sioux Tribes
Office of Environmental Protection
Box 1027
Poplar, MT 59255

CONCURRENCE COPY

OCT 31 1991

Ref: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
EPA Permit No. MT2026-00026
East Poplar Unit (EPU) No. 80-D
Roosevelt County, Montana

Dear Mr. Reede:

Staff members of the Environmental Protection Agency's (EPA), UIC Implementation Section, reviewed the August 8, 1991, Halliburton Differential Temperature Log and Halliburton Fluid Travel Log for the EPU No. 80-D. They concluded that the Temperature Log shows characteristics which indicate there may be flow behind the longstring above the perforations, and that this flow may extend as high as 3100 feet kelly bushing (KB). The absence of a shut-in Temperature Log makes it difficult to conclusively evaluate conditions behind the pipe. We suggest that a Temperature Log be run after a minimum shut-in time of six (6) hours. We also suggest that the log run commence farther up the hole, i.e., at 150 feet KB, which is the top of the only underground source of drinking water (USDW) identified in the EPU No. 80-D. We also require that an explanation of the cause for the "tool log spike" shown on the Temperature Log be included in the logging report.

The Radioactive Tracer Log continues to be inconclusive. Murphy Oil USA did not utilize the procedural tracer survey guidelines approved by the EPA for detection of flow behind pipe (copy enclosed). The approved method calls for logging the well during injection to monitor the change and movement of the radioactive slug with time. The determination of fluid flow behind the casing would involve the following action:

a) Place radioactive slug at least 20 feet above injection perforations during injections at a constant rate with a surface pressure close to the normal operating pressure;

b) Make overlapping logs of the slug as it moves into the perforations;

8WM-DW 10/16/91 | 8WM-DW 10/21/91 | 8WM-DW 10/24/91 | 8WM-DW 10/27/91

c) After the slug has moved into the perforations, make several logs up the hole to a point above the disposal zone confining interval; and

d) Logging should continue until the slug has completely disappeared.

It is observed that neither Halliburton nor Murphy Oil supplied key information on the logs which are necessary for the logs interpretation. Information which must be supplied includes:

a) The actual injection rate and pressure;

b) The approximate down hole velocity used to estimate approximate flow time of the slug into the formation; and

c) A narrative of how the log was run and what the results mean.

Murphy Oil USA, Inc. must conduct a new Radioactive Tracer Survey and Differential Temperature Survey within ninety (90) days of receipt of this letter. If you have any questions in regard to this action or with test procedures, please contact Emmett Schmitz at (303) 293-1436. Please send all communication to the **ATTENTION: EMMETT SCHMITZ** citing **MAIL CODE: 8WM-DW** very prominently.

Sincerely,

Original Signed By
ROGER FRENETTE

Max H. Dodson, Director
Water Management Division

Enclosure: Accepted Radioactive Tracer Survey Guideline and Procedure.

cc: Jim Boyter, MO

Debi Madison
Fort Peck Assiniboine & Sioux Tribes
Office of Environmental Protection
Box 1027
Poplar, MT 59255

CONCURRENCE COPY

FEB 7 1992

Ref: 8WM-DW

CERTIFIED MAIL
RETURN REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
East Polar Unit (EPU) No. 80-D
EPA Permit No. MT2026-00026
Roosevelt County, Montana

Dear Mr. Reede:

In response to your telephone inquiry of January 6, 1991, to Emmett Schmitz, of this office, concerning running a radioactive tracer survey (RATS) at high surface injection pressures, the Environmental Protection Agency (EPA) concurs with your opinion that under those circumstances a definitive RAT survey is not possible. The EPA will require that Murphy Oil run a Differential Temperature log in lieu of the RAT survey.

The EPA did review the August 8, 1991, Halliburton Differential Temperature Log for the EPU No. 80-D. We have concluded that the Temperature Log does not permit a definitive interpretation of fluid conditions behind pipe. Therefore, the EPA will require you to run another Temperature Log (1) immediately prior to shut-in; (2) a log after a minimum shut-in time of six (6) hours; and (3) a log after twelve (12) hours of shut-in. The EPA also requires that Murphy Oil commence the log run farther up the hole, i.e., at 150 feet KB, which is the top of the only underground source of drinking water (USDW) identified in the EPU No. 80-D. You are also requested to explain the cause for the "tool log spike" shown on the August 8, 1991, Temperature Log survey.

8WM-DW 1/23/92 | 8WM-DW 1/27/92 | 8WM-DW 2/4/92 | 8WM-DW 2/5/92

As soon as the winter climate moderates, but within ninety (90) days of receipt of this letter, Murphy Oil USA, Inc. shall run a Differential Temperature Log according to the guidelines described in the preceding paragraph. If you have any questions in regard to the above action, please contact Emmett Schmitz at (303) 293-1436. All correspondence should be sent to the **ATTENTION: EMMETT SCHMITZ**, citing **MAIL CODE: 8WM-DW** very prominently.

Sincerely,

Original Signed By
ROGER FRENETTE

Max H. Dodson, Director
Water Management Division

cc: Jim Boyter, MO

Debi Madison
Fort Peck Assiniboine & Sioux Tribes
Office of Environmental Protection
Box 1027
Poplar, MT 59255

FCD:January 15, 1992:ers\disk15\a:\mrfy0026\templog.ltr

Bob Blackford

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

received 2-11-92

FEB 7 1992

Ref: 8WM-DW

CERTIFIED MAIL
RETURN REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
East Polar Unit (EPU) No. 80-D
EPA Permit No. MT2026-00026
Roosevelt County, Montana

Dear Mr. Reede:

In response to your telephone inquiry of January 6, 1991, to Emmett Schmitz, of this office, concerning running a radioactive tracer survey (RATS) at high surface injection pressures, the Environmental Protection Agency (EPA) concurs with your opinion that under those circumstances a definitive RAT survey is not possible. The EPA will require that Murphy Oil run a Differential Temperature log in lieu of the RAT survey.

The EPA did review the August 8, 1991, Halliburton Differential Temperature Log for the EPU No. 80-D. We have concluded that the Temperature Log does not permit a definitive interpretation of fluid conditions behind pipe. Therefore, the EPA will require you to run another Temperature Log (1) immediately prior to shut-in; (2) a log after a minimum shut-in time of six (6) hours; and (3) a log after twelve (12) hours of shut-in. The EPA also requires that Murphy Oil commence the log run farther up the hole, i.e., at 150 feet KB, which is the top of the only underground source of drinking water (USDW) identified in the EPU No. 80-D. You are also requested to explain the cause for the "tool log spike" shown on the August 8, 1991, Temperature Log survey.

As soon as the winter climate moderates, but within ninety (90) days of receipt of this letter, Murphy Oil USA, Inc. shall run a Differential Temperature Log according to the guidelines described in the preceding paragraph. If you have any questions in regard to the above action, please contact Emmett Schmitz at (303) 293-1436. All correspondence should be sent to the ATTENTION: EMMETT SCHMITZ, citing MAIL CODE: 8WM-DW very prominently.

Sincerely,

Max H. Dodson, Director
Water Management Division

cc: Jim Boyter, MO

Debi Madison
Fort Peck Assiniboine & Sioux Tribes
Office of Environmental Protection
Box 1027
Poplar, MT 59255

MURPHY
OIL USA, INC.

POST OFFICE BOX 547
POPLAR, MONTANA 59255

May 7, 1992

Mr. Emmett Schmitz
United States Envornmental Protection
Agency Region VIII
One Denver Place - Suite 1300
999 18th Street
Denver, Co 80202-2413

Dear Mr. Schmitz:

Re: 8WM-DW
Temperature Log, EPU
80-D

Enclosed you will find a copy of Halliburton Logging Services Differential Temperature Log that was run May 5, 1992. Also enclosed is a copy of Halliburton's interpretation of the temperature survey. I hope these are satisfactory.

Yours very truly,

Raymond F. Reede
Raymond F. Reede
District Manager

RR/sb
cc: Sidney Campbell, Murphy E&P, New Orleans, La
enclosures

MURPHY
EXPLORATION & PRODUCTION COMPANY

POST OFFICE BOX 547
POPLAR, MONTANA 59255

January 4, 1993

Max H. Dodson, Director
Water Management Division
US Environmental Protection Agency
Region VIII - Suite 500
999 18th Street
Denver CO 80202-2405

Dear Mr. Dodson:

Enclosed are the water analysis reports on the following salt water disposal wells:

East Poplar Unit 1-D	MTS2022-0022
East Poplar Unit 5-D	MTS2021-0021
East Poplar Unit 8-D	MTS2023-0023
East Poplar Unit 80-D	MTS2026-0026
Sletvold 2-D	MT2619-03705
Lillian 1-D	MTS2035-0046
Wetsit 1-D	MTS2303-0612
Courchene 2-D	MTS2398-1768

Sincerely,

Raymond Reede
District Manager

RR/jh
enclosures

cc: Jim Boyter EPA Helena

MURPHY
EXPLORATION & PRODUCTION COMPANY

POST OFFICE BOX 547
POPLAR, MONTANA 59255

January 13, 1995

Max H. Dodson, Director
Water Management Division
US Environmental Protection Agency
Region VIII - Suite 500
999 18th Street
Denver CO 80202-2405

Dear Mr. Dodson:

Enclosed are the water analysis reports on the following salt water disposal wells:

East Poplar Unit 1-D	MTS2022-0022
East Poplar Unit 5-D	MTS2021-0021
East Poplar Unit 8-D	MTS2023-0023
East Poplar Unit 80-D	MTS2026-0026
Sletvold 2-D	MT2619-03705
Lillian 1-D	MTS2035-0046
Wetsit 1-D	MTS2303-0612
Courchene 2-D	MTS2398-1768

Sincerely,

Raymond Reede

Raymond Reede
District Manager

RR/jh
enclosures

cc: Jim Boyter EPA Helena

MURPHY
EXPLORATION & PRODUCTION COMPANY

POST OFFICE BOX 547
POPLAR, MONTANA 59255

February 8, 1999

Steven Sasaki
Board Of Oil and Gas Conservation
2535 St. John's Avenue
Billings, MT 59102

Re: Renewal of Pit Permits

Dear Mr. Sasaki

As the pit permits have now expired or are going to expire shortly we would like to request an extension of these permits until the lease is plugged and restoration work takes place. The following is a list of the pits we would like to have the permits extended on.

EPU No. 1-D	SE SE Section 30, T29N, R51E	Federal
EPU No. 5-D	SE SE Section 19, T29N, R51E	Federal
EPU No. 8-D	NW SE Section 10, T29N, R51E	Federal
EPU No. 80-D	SW NW Section 3, T28N, R51E	Federal
War Club No. 1	NW SE Section 11, T 29N, R50E	Federal

If you have any questions concerning these pits, please contact the Poplar Office for any addition information you might require.

Yours truly,

Raymond Reede

Raymond Reede
District Manager

sb
cc: Sidney Campbell, New Orleans, LA.
file

SPUR

IN REPLY REFER TO:

3160
NTL-2B

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
MILES CITY DISTRICT OFFICE
P.O. Box 940
Miles City, Montana 59301

DEC 27 1985

Murphy Oil USA, Inc.
P. O. Box 547
Poplar, Montana 59255

RE: NTL-2B Approval for the East Poplar Unit

Gentlemen:

We have received your NTL-2B application dated 12/2/85, for the federal wells within the East Poplar Unit boundaries. BLM regulation requires NTL-2B approval for all wells within a federal unit. We will not require additional NTL-2B application for nonfederal wells within the unit, rather this letter will serve as NTL-2B approval for all existing wells in the East Poplar Unit. Produced water from the unit is approved for disposal into the following wells:

EPU SWD No. 1 EPA ID No. MTS21PE-0022,
EPU SWD No. 80 EPA ID No. MTS21PE-0026,
EPU SWD No. 8 EPA ID No. MTS21PE-0023,
EPU SWD No. 5 EPA ID No. MTS21PE-0021, and
EPU SWD No. 29 EPA ID No. MTS21PE-0024.

The following conditions apply to this NTL-2B approval for the disposal of produced water from the referenced unit:

Receipt of this approval does not constitute EPA approval for subsurface injection.

Upon receipt of EPA approval, a copy of the EPA permit must be submitted to this office.

All unauthorized discharges or spills must be reported to this office in accordance with CFR Title 40, Parts 124, 144, 146, and 147.

For future wells, complete NTL-2B applications will not be required. Instead, a Well Completion Report (Form 3160-4) should be used with a statement referring to NTL-2B approval and an explanation of the water source and disposal facilities (see example attached).

Wells outside the unit boundaries will require separate NTL-2B approval.

Any changes to these approved procedures must be submitted via Sundry Notice (Form 3160-5) prior to the commencement of operations.

If you have any questions, please contact Jamie Connell at (406) 232-4331.

Sincerely yours,

Asst. District Manager
Division of Mineral Resources

MURPHY
EXPLORATION & PRODUCTION COMPANY

POST OFFICE BOX 547
POPLAR, MONTANA 59255

February 8, 1999

Steven Sasaki
Board Of Oil and Gas Conservation
2535 St. John's Avenue
Billings, MT 59102

Re: Renewal of Pit Permits

Dear Mr. Sasaki

As the pit permits have now expired or are going to expire shortly we would like to request an extension of these permits until the lease is plugged and restoration work takes place. The following is a list of the pits we would like to have the permits extended on.

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EPU No. 5-D	SE SE Section 19, T29N, R51E	Federal
EPU No. 8-D	NW SE Section 10, T29N, R51E	Federal
EPU No. 80-D	SW NW Section 3, T28N, R51E	Federal
War Club No. 1	NW SE Section 11, T 29N, R50E	Federal

If you have any questions concerning these pits, please contact the Poplar Office for any addition information you might require.

Yours truly,

Raymond Reede

Raymond Reede
District Manager

sb
cc: Sidney Campbell, New Orleans, LA.
file

Corrpro Companies, Inc.
"A Commitment to Excellence"
505 North 24th Street
Billings, Montana 59101
Tel 406-248-7170 • 800-448-7170
Fax 406-248-7304

May 30, 1999

Murphy Oil Corporation
PO Box 547
Poplar Montana
59255

Attn. Mr. Ray Reede

Re: Cathodic Protection System installation, activation and repair

Dear Sir:

We have completed the installation of the new cathodic protection system for the Huber 5-10 disposal well. The cathodic protection system consists of 8 each, 3"x60", linseed oil treated, graphite anodes back-filled with 500 pounds of calcined petroleum cokebreeze per anode. Anode lead wires are #8 AWG with HMW-PE insulation. The anodes are installed horizontally at a depth of 8 feet. Anode spacing is 15 feet. The positive cable is #6 AWG with black HMW-PE insulation. The negative cable is #6 AWG with white HD-PE insulation. The groundbed is powered by an RTS model CSAYSD 24-16 AZ rectifier that is pole-mounted. An "as-built" drawing of the cathodic protection system has been included with this letter.

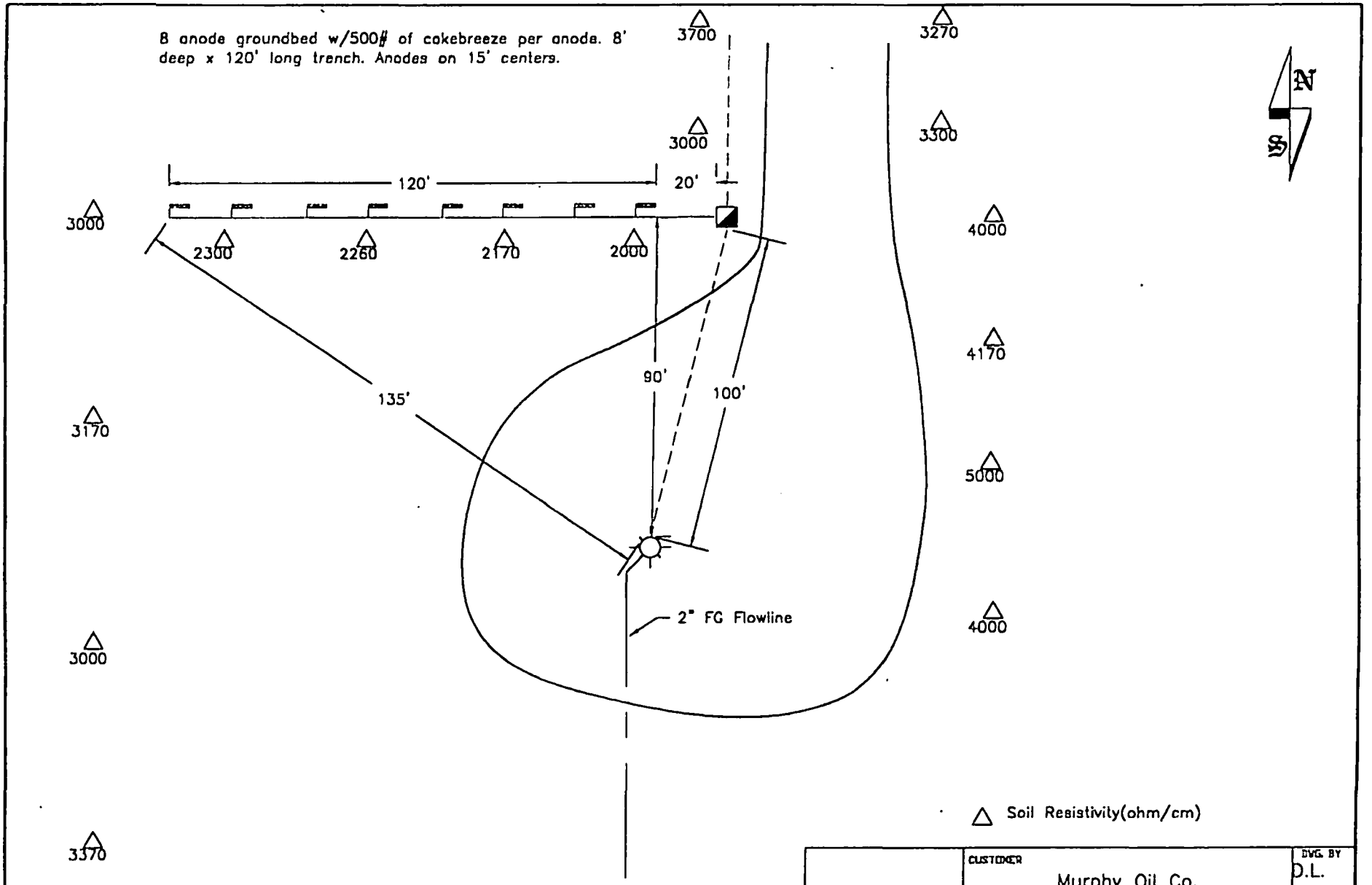
Testing and repairs were also completed on the rectifier at the 90-D disposal well. A new transformer and rectifier stack assembly was installed and the rectifier was placed back into service. Both rectifiers were adjusted to target current outputs of 10.0 amps to the well casings. Potential levels noted on the well casings indicated high protection levels at both sites. The flowline at the 90-D disposal well was found to be shorted to the casing. An insolating union should be installed to separate the well casing from the surface facilities. No other problems were noted at this time.

It has been a pleasure being of service in your corrosion mitigation program, if you have any questions or require additional service please contact us.

Respectfully Submitted,

Brent Cathey

Brent Cathey
Corrpro Companies Inc.


8 anode groundbed w/500# of cokebreeze per anode. 8' deep x 120' long trench. Anodes on 15' centers.
3700
3270
3000
3300
120'
20'
3000
4000
2300
2260
2170
2000
4170
90'
135'
100'
3170
5000
2" FG Flowline
4000
3000
3370
N
S
Soil Resistivity(ohm/cm)
LEGEND
RECTIFIER
THERMOELECTRIC GENERATOR
SOLAR UNIT
ANODE JUNCTION BOX
CURRENT CONTROL BOX
RTU
ANODES (HORIZ.)
ANODE (VERTICAL)
DEEP G/B (VERT.)
SOIL RESISTIVITY (ohm/cm)(Ohm/cm DEPTH)
PUMPING UNIT
WELL HEAD
DE-HY OR SEPARATOR
PRODUCE TANK
POSITIVE CABLE
NEGATIVE CABLE
FLOWLINE
POWER CABLE
Corrpro Companies, Inc.
•Billings, Montana•
CUSTOMER
Murphy Oil Co.
Poplar, MT.
LOCATION
East Poplar Field
Huber 5-D WDW
AS BUILT CATHODIC PROTECTION SYSTEM
SCALE NTS
DATE
DWG. NO.
DWG. BY
D.L.
DESN. BY
D.L.
CK. BY
B.C.

Murphy Oil Corp
East Poplar Field
Activation Data

Disposal Well 4D

Rectifier Data

Universal
MWC-3
220/480 VAC
28 VDC
18 ADC

	As Found	As Left
Date		5/24/99
Tap Setting	OFF	C1-F1
DC Volts		5.5
DC Amps		10.0
Circuit Res.		0.55

Potential Data	**Static**	**ON**	
Casing	550	1046	
Flowline	550	1046	No isolation Kit

Disposal Well Huber 5-D

Rectifier Data

RTS
CAYSAD 24-16
480 VAC
24 VDC
16 ADC
Ser # C983706

	As Found	As Left
Date	New Site	5/22/99
Tap Setting		A-4
DC Volts		4.25
DC Amps		10.00
Circuit Res.		0.43

Potential Data	**Static**	**ON**
Casing	610	1070
Flowline	Fiberglass	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 500
DENVER, CO 80202-2466

JUN 22 1999

Ref: 8ENF-T

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede, District Manager
Murphy Exploration & Production Company
P.O. Box 547
Poplar, MT 59255

Re: UNDERGROUND INJECTION CONTROL (UIC)
Notice of Noncompliance
Annual Monitoring Reports
Roosevelt County, MT

Dear Mr. Reede:

Enclosed are Annual Disposal/Injection Well Monitoring Report forms (EPA Form 7520-11) for the wells listed below for the year 1998. These forms should have been submitted by February 15 of this year. Pursuant to permit condition Part II, Section D you are required to submit Annual Monitoring Report forms. Each well requires a separate form, whether the well is active or temporarily abandoned. Please submit the forms within thirty (30) days of receipt of this letter.

Well Name	Permit Number
Mule Creek Allotted #1	MT2791-04292
Well #5-D	MT2021-00021
Well #80-D	MT2026-00026
Well EPU #1-D	MT2022-00022
Well EPU #8-D	MT2023-00023
Well Huber #5	MT2779-04278

Any person who violates any requirement of the Underground Injection Control (UIC) program is subject to enforcement action under Section 1423 of the Safe drinking Water Act. [42 U.S.C. Section 300h-2], et seq.. Enforcement may include civil penalties of up to $27,500 for each day for each violation and require compliance with all provisions of the Safe Drinking Water Act. If the violation is willful, criminal penalties may be prosecuted in accordance with Title 18 of the United States Code.

If you have any questions concerning this letter, you may contact John Carson at (303) 312-6203. Also, please direct all correspondence to the attention of John Carson at Mail Code 8ENF-T.

Sincerely,

Connally E. Mears

Connally E. Mears, Director
Technical Enforcement Program

Enclosures: EPA Form 7520-11

cc: Deb Madison
Environmental Program Manager
Assiniboine & Sioux Tribes
P.O. Box 1027
Poplar, MT 59255

Spike Bighorn, Chairman
Fort Peck Tribal Executive Board
Assiniboine & Sioux Tribes
P.O. Box 1027
Poplar, MT 59255

Sandra Brooks, Field Manager
Billings Field Office
Bureau of Land Management
810 East Main Street
Billings, MT 59105-3395

MURPHY
EXPLORATION & PRODUCTION COMPANY

POST OFFICE BOX 547
POPLAR, MONTANA 59255

June 28, 1999

John Carson
United States Environmental Protection Agency
Region 8
999 18th Street – Suite 500
Denver, Co 80202-2466

Dear Mr. Carson

As per our phone conversation you will find copies of the Underground Injection Control Annual Monitoring Reports which we originally submitted sometime in late January of this year. The reports submitted cover the following wells:

EPU No. 5-D	MT2021-00021
EPU No. 80-D	MT2026-00026
EPU No. 1-D	MT2022-00022
EPU No. 8-D	MT2023-00023
Huber No. 5-D	MT2779-04278

No report was submitted on the Mule Creek Allotted No. 1 MT2791-04292 as the application for permit was cancelled in July of 1997.

Sincerely,

Sharon Bravard
Sharon Bravard

A.F.E. No. 57-4-2

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NW Section 3-T28N-R51E, Roosevelt County, Montana

WELL DRILLING & CONSTRUCTION EXPENSE:	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling - Footage - 5800' @ $5.25/ft.	$ 30,450	$	$ 30,450
Daywork - 1 day @ $850/day & 2 days @ $775/day	850	$ 1,550	850 1,550
Loc. survey, permit & prep.	350		350
Roads, fences, cattleguard, etc.	800		800
Mud mat. & chem., incl. oil & gas	6,000		6,000
Cementing casing	2,200	950	3,150
Testing services incl. swabbing		350	350
Other logs, surveys & analysis	1,850	800	2,650
Perforating services		1,200	1,200
Hydrafrac, acidize, etc. incl. oil		1,400	1,400
Float equip., centralizers, etc.	250	650	900
Trucking, welding & other labor	250	250	500
Supervision & miscellaneous	250	250	500
Total Est. Well Drlg. & Const. Exp.	$ 43,250	$ 7,400	$ 50,650
WELL EQUIPMENT COSTS:			
Casing: 150' of 13-3/8" O.D.	$ 800		$ 800
Casing: 1000' of 9-5/8" O.D.	3,775		3,775
Casing: 5800' of 5-1/2" O.D.		$ 9,700	9,700
Tubing: 5800' of 2-7/8" O.D.		4,800	4,800
Caging head & connections	300		300
Xmas tree & connections		800	800
Total Est. Well Equip. Costs	$ 4,875	$ 15,300	$ 20,175
Total Est. Cost of Well	$ 48,125	$ 22,700	$ 70,825
LEASE EQUIPMENT:			
Flow lines		$ 2,500	$ 2,500
Other line pipe, valves & fittings		500	500
Trucking, welding & other labor		500	500
Total Est. Cost of Lease Equip.		$ 3,500	$ 3,500
TOTAL EST. COST OF WELL & LEASE EQUIP.	$ 48,125	$ 26,200	$ 74,325

APPORTIONMENT OF TOTAL ESTIMATED COSTS

	%			
Murphy Corporation - Unit Operator	31.448570	$ 15,135	$ 8,239	$ 23,374
Munoco Company	2.096565	1,009	549	1,558
Placid Oil Company	33.545035	16,144	8,789	24,932
The Carter Oil Company	16.335860	7,862	4,280	12,142
Phillips Petroleum Company	16.335860	7,862	4,280	12,142
C. F. Lundgren	.238210	115	62	177

APPROVAL OF EXPENDITURE

Requested by:

Harold Murphy — 5/31/56
Division Production Supt. — Date

Recommend Approval:

Staff Production Man — Date

Recommend Approval:

J P Langford — 5/31/56
Division Manager — Date

Budget Supervisor — Date

Approved:

By — Date

Approved:

Vice President-Operations — Date

HM:eg
5-31/56

A.F.E. No. 57-4-32

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NW Section 3-T28N-R51E, Roosevelt County, Montana
(Installation of Pumping Unit)

Pumping unit complete with engine	$5,650
Labor and materials setting unit	750
Trucking, small fittings, and incidentals	150
Rods, pump, and well head equipment	3,000
TOTAL ESTIMATED COST	$9,550

APPORTIONMENT OF TOTAL ESTIMATED COST

	%	
Murphy Corporation	31.448470	$3,003
Munoco Company	2.098565	200
Placid Oil Company	33.545035	3,203
The Carter Oil Company	16.335860	1,560
Phillips Petroleum Company	16.335860	1,560
C. F. Lundgren	.238210	23

APPROVAL OF EXPENDITURE

Requested by:

Harold Mullen JUL 10 1956

Division Production Supt. Date

Recommend Approval:

Staff Production Man Date

Recommend Approval:

J H Langford JUL 10 1956

Division Manager Date

Recommend Approval:

Budget Supervisor Date

Approved:

By Date

Approved:

Vice President-Operations Date

A.F.E. ~~55995~~ #9-5005

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NW Section 3, T28N, R51E, Roosevelt County, Montana
(Workover #1)

1,000 Gallons Acid and Service	$650
Miscellaneous Labor and trucking	150
Total Estimated Cost	$800

Present Status: Pumping from the "A-1" Zone. Tested May 3, 1958, 68 BFPD, 71% water (48 BWPD, 20 BOPD).

History: Completed July 29, 1956 in the "A-1" Zone from 5456'-5474' (18'), acidized with 500 gallons acid, break down pressure 2500 psi. Injected .4 BPM at 2000 psi. Final injection pressure 1750 psi. Total accumulated production April, 1958 -- 63,795 BF, 36,479 BO, 27,316 BW. Well test has declined from 31 BOPD December 2, 1957 to 20 BOPD May 3, 1958.

Proposed Workover: To increase production, re-acidize through casing annulus with 1000 gallons Howco retarded acid, pump test.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.4484470%	$252
Munoco Company	2.0965655%	16
Placid Oil Company	33.5450035%	268
Carter Oil Company	16.335860%	131
Phillips Petroleum Company	16.3358600%	131
C. F. Lundgren	.2382103%	2

APPROVAL OF EXPENDITURE

Requested by: /MH/ 5-27-58
Date

Recommend Approval:

Recommend Approval:
/s/ L. L. Duncan 6-6-58
Staff Production Man Date

/Pauls D. Miller/ MAY 29 1958
Division Production Supt. Date

Recommend Approval:
/s/ Harold Robiele 6-6-58
Budget Supervisor Date

Recommend Approval:
/Gordon Kirby/ MAY 29
Division Manager Date

Approved:
/s/ Paul C. McDonald 6-6-58
Vice President-Operations Date

MTJ:ism
5-27-58

A.F.E. #9-5047

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NE Section 3, T28N, R51E, Roosevelt County, Montana
(Workover #2)

3000 Gallons HOWCO HV Acid and Pump Truck	$1,500
Miscellaneous trucking and labor	500
Total Estimated Cost	$2,000

Present Status: Pumping 14 BOPD, 45 BWPD, 77% water from the "A-1" Zone.

History: Completed July 29, 1956, from the "A-1" Zone perforations 5456' to 5474'. Cumulative production through December, 1958 was 42,254 BO and 40,665 BW.

Justification for Workover: to increase production.

Proposed Workover: Re-acidize the "A-1" Zone with 3000 gallons Howco HV acid (Workover #1 -- 1000 gallons). Acidize down casing annulus to eliminate the cost of pulling rods. Pump test.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.4484470%	$ 629
Munoco Company	2.0965565%	42
Placid Oil Company	33.5450035%	671
Carter Oil Company	16.3358860%	327
Phillips Petroleum Company	16.3358860%	327
C. F. Lundgren	.0238210%	4

APPROVAL OF EXPENDITURE

Requested by: [signature] 2-19-59
Date

Recommend Approval:

Harold [signature] by Cur 2-23-59
Division Production Supt. Date

Staff Production Man Date

Recommend Approval:

R L [signature] 2/23/59
Division Manager Date

Recommend Approval:

Budget Supervisor Date

Approved:

Vice President-Operations Date

Received approval from El Dorado 3-16-59

MTJ:mm
2-19-59

File #80

A.F.E. No. 60-5070

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NE Section 3, T28N, R51E, Roosevelt County, Montana
(Workover #3)

Pulling Unit 3 (8 Hr) days @ $224 per day		$ 675
Perforate (2 holes) with abrasive jet and 500 gallon acid job		975
Retrievable packer and service		500
Miscellaneous trucking and labor		150
Total Estimated Cost		$2,300

Present Status: Pumping from "A-1 & 2" Zone perforations, 5456-74'. Pumping 4 BOPD, 34 BWPD (uneconomical).

History: Well No. 80 was completed on July 29, 1956, in the "A-1 & 2" Zone through perforations, 5456'-5474', with an initial potential of 125 BOPD, 48 BWPD. Production declined to 11 BOPD, 57 BWPD on June 17, 1958, and was acidized with 1,000 gallons (W.O. #1). Workover Potential was 26 BOPD, 80 BWPD. Production declined to 14 BOPD, 47 BWPD by March 3, 1959, and was reacidized with 3,000 gallons (W.O. #2). Workover Potential was 28 BOPD, 80 BWPD. Accumulated production from "A-1 & 2" Zone - 47,764 Net BO, 56,391 BW.

Proposed Workover: Perforate the A-3 Zone at 5491' with Dowell abrasive jet 2 holes, 180° apart, acidize with 500 gallons, acidize through retrievable packer to isolate perforation 5456-74'. Test the A-3 Zone and produce comingled with the A-1 and 2 Zones.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 723
Manoco Company	2.096565%	49
Placid Oil Company	33.545035%	771
Carter Oil Company	16.335860%	376
Phillips Petroleum Company	16.335860%	375
C. F. Lundgren	.238210%	6

APPROVAL OF EXPENDITURE

Requested by: M M Lamar, Field Production Supt. 3-2-60 Date

Recommend Approval: _____ Division Production Supt. Date

Recommend Approval: _____ Staff Production Man Date

Recommend Approval: _____ Division Manager Date

Recommend Approval: _____ Budget Supervisor Date

Approved: _____ Vice President - Operations Date

Received approval from El Dorado 3-17-60.
No approval needed from partners as estimated cost is over + less than $5000

MTJ:m

A.F.E. No. 60-5070

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NE Section 3, T28N, R51E, Roosevelt County, Montana
(Workover #3)

(Supplement No. 1)

Pulling Unit - Two (8 hour) days @ $224 per day	$ 475
Additional Services	475
Total Estimated Cost	$ 950

Justification for Expenditure: Increase in pulling unit time and service charge due to packer failure and additional material for cutting 3" slots.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 299
Munoco Company	2.0965655%	20
Placid Oil Company	33.5450355%	319
Carter Oil Company	16.3358605%	155
Phillips Petroleum Co.	16.3358605%	155
C. F. Lundgren	.2382105%	2

APPROVAL OF EXPENDITURE

Requested by: M. H. Sanders [signature] 4-18-60
Field Production Supt. Date

Recommend Approval: Recommend Approval:

Division Production Supt. Date Staff Production Man Date

Recommend Approval: Recommend Approval:

Division Manager Date Budget Supervisor Date

Approved:

Vice-President - Operations Date

Approved E.l. Daniels 6-3-60.
No other approval necessary.

MTJ:m
4-18-60

A.F.E. No. 2-2401

AUTHORITY FOR EXPENDITURE

MURPHY CORPORATION - EAST POPLAR UNIT #WL 80
SW NE Section 9, T28N, R51E, Roosevelt County, Montana

(PREP. FOR SALT WATER DISPOSAL INTO DAKOTA SAND)

Pulling unit 7 (10 hr.) days @ $290 per day.	$ 2,025
Bridge plug, cmt. retainer, and service.	$ 725
2 block sqz perf., set bridge plugs on WL & selectively perf 32' 126', and 56' (208') 4 holes per ft.	$ 2,400
Block sqz below and above Dakota sand 2 stages .75 sks each.	$ 1,400
Pump truck to water frac Dakota sand.	$ 800
×3250' of 3½" OD 9.20# H-40 reg tbg internally coated @ $1.82 per ft.	$ 5,825
Miscellaneous trucking, labor, and material.	$ 500
TOTAL ESTIMATED COST	$ 13,675

(SALT WATER DISPOSAL FACILITIES)

×2400' of 8" class 100 cement-asbestos w/fluid tite coupling @ $2.25 per ft.	$ 5,400
Laying, ditching, and back fill 2400' of 8" cement-asbestos S.W. Gath. Line @ $0.85 per ft.	$ 2,050
Connections for tie-ends and line scraper traps.	$ 1,100
×1 125 HP electric motor (less controls).	$ 2,100
Miscellaneous trucking, labor, electrician, and Material.	$ 2,500
TOTAL ESTIMATED COST (FACILITIES)	$ 13,150
TOTAL ESTIMATED COST DISPOSAL WELL AND FACILITIES	$ 26,825

JUSTIFICATION FOR EXPENDITURE

The 7" and 4½" internally coated steel discharge line to EPU #59-D has had 6 leaks within the last 40 days, (repair cost $1000). Leak frequency will increase and the line will have to be replaced, lined, or abandoned. Est. cost to replace or install plastic liner - $31,500.

The disposal capacity of #1-D is not sufficient to handle the unit salt wtr volume of 17,300 BPD. Additional disposal capacity is required to comply with Montana Oil & Gas Commission order of sub-surface disposal of all produced Salt Water.

EPU #80 depleted and watered out in the A zone and temporarily abandoned. 3 workovers failed to increase production. B and C zones structurally low.

Proposed Workover - Set bridge plug w/1 sk cmt above A zone perf. Block sqz btm & top of Dakota sd. Selectively perf and wtr frac 208' of Dakota sd in 3 sections.

Facilities - Station semi-portable. 1 oil well triplex pump, 100 bbls internally plastic coated steel tk skid mounted and electric motor controls surplus material.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 8,437
Monoco Company	2.096565%	$ 562
Placid Oil Company	33.545035%	$ 8,998
Humble Oil & Refining Company	16.335860%	$ 4,382
Phillips Petroleum Company	16.335860%	$ 4,382
C. F. Lundgren	.230210%	$ 64

APPROVAL OF EXPENDITURE

Requested by: M H Lucas — Field Production Superintendant — 10-18-62 Date

RECOMMEND APPROVAL:

Production Superintendant — Date

APPROVED:

Production Manager — Date

A.F.E. NO. 3-1519

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 80
SW NW Section 3, T28N, R51E, Roosevelt County, Montana

(PREP. FOR SALT WATER DISPOSAL INTO DAKOTA SAND)

Pulling unit 7 (10 hour) days @ $300 per day	$ 2,100
Bridge plug, cement retainer, and service	$ 725
2 block sqz perf., set bridge plugs on WL & selectively perf. 32', 126', and 50' (208') 4 holes per foot	$ 3,400
Block sqz below and above Dakota Sand 2 stages .75 sks each	$ 1,400
Pump truck to water frac Dakota Sand	$ 800
3250' of 3½" OD 9.20# H-40 reg tbg internally coated @ $1.82 per ft.	$ 5,825
Miscellaneous trucking, labor, and material	$ 500
TOTAL ESTIMATED COST	$14,750

(SALT WATER DISPOSAL FACILITIES)

2400' of 8" class 100 cement-asbestos with fluid tite coupling @ $2.25 per foot.	$ 5,400
Laying, ditching, and back fill 2400' of 8" cement-asbestos S.W. Gath. Line @ $0.85 per foot.	$ 2,050
Connections for tie-ends and line scraper traps.	$ 1,100
1 - 125 HP electric motor (less controls)	~~$ 2,100~~
Miscellaneous trucking, labor, electrician, and material	$ 2,500
TOTAL ESTIMATED COST (FACILITIES)	$13,150
TOTAL ESTIMATED COST DISPOSAL WELL AND FACILITIES	$27,900

JUSTIFICATION FOR EXPENDITURE

The repair cost on the steel injection lines to EPU #59-D, Dakota Sand disposal well, Smith #1, Rehder #7, and Owen-Simons #1 pressure maintenance wells, is averaging $300 per month and the leak frequency is increasing. (The leaks have damaged and will continue to damage farm land until abandoned or replaced). The estimated cost to replace the high pressure steel lines. $58,000

The disposal capacity of #1-D is not sufficient to handle the unit salt water volume of 16,000 BPD. Additional disposal capacity is required to comply with Montana Oil & Gas Commission order of sub-surface disposal of all produced Salt Water.

EPU #80 depleted and watered out in the A-Zone and temporarily abandoned. Three workovers failed to increase production. B and C Zones structurally low.

PROPOSED WORKOVER: Set bridge plug w/1 sk cmt above A-Zone perf. Block sqz btm & top of Dakota sd. Selectively perf and wtr frac 208' of Dakota sd in 3 sections.

FACILITIES: Station semi-portable. 1 oil well triplex pump, 100 bbls internally plastic coated steel tk skid mounted and electric controls surplus material.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470%	$ 8,774
Monoco Company	2.096565%	$ 585
Placid Oil Company	33.545035%	$ 9,359
Humble Oil & Refining Company	16.335860%	$ 4,558
Phillips Petroleum Company	16.335860%	$ 4,558
C. F. Lundgren	.238210%	$ 66

APPROVAL OF EXPENDITURE

Requested By: M. H. James — Date: 7-20-63 — Recommend Approval:

L. L. Duncan — Date — W. J. Thornton — Date

APPROVED:

Manager - P. & E. — Date

MTJ copy

A.F.E. NO. 3-1519 SI

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80
SW NW Section 3, T28N, R51E, Roosevelt County, Montana

(TO PREP. EPU #80-D FOR SALT WATER DISPOSAL AND FACILITIES)

JUSTIFICATION:

EPU #80-D Disposal Well, Supplement #1 to A.F.E. #3-1519 is to cover the additional expense due to cementing 5-1/2" casing and requiring extra squeeze job.

EPU #80-D Facilities, Supplement #1 to A.F.E. #3-1519 was overspent because it was anticipated that the work would be done in warmer weather instead of sub zero weather.

TOTAL OVERSPENT 80-D AND FACILITIES	$2,900

APPORTIONMENT OF TOTAL ADDITIONAL EXPENSE

Murphy Corporation	31.448470%	$ 912
Manoco Company	2.096565%	$ 60
Placid Oil Company	33.545035%	$ 973
Humble Oil & Refining Company	16.335860%	$ 474
Phillips Petroleum Company	16.335860%	$ 474
C. F. Landgren	.238210%	$ 7

APPROVAL OF EXPENDITURE

Requested By: M T James — 1-21-64 (Date) — Recommend Approval:

L. L. Duncan — 1-28-64 (Date) — W. J. Thornton — 1-28-64 (Date)

APPROVED:

Manager - P. & E. — Date

MTJ/bab
1-21-64

A.F.E. No. 3-1508

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80-D
SW NW Section 3, T28N, R51E, Roosevelt County, Montana
(Change Tubing String)

HISTORY: Converted to a salt water disposal well in the Dakota Sand December, 1963 with 3-1/2" O.D. steel tubing internally coated with Tube-Kote TK-2 coating. Indicated tubing leak developed February, 1968 (4 years service). Cumulative salt water disposal through January, 1968 5,701,241 bbls. water.

PRESENT STATUS: January, 1968 disposal 108,500 bbls. water at an average injection pressure of 230 PSIG. No tubing survey was ran after the results of EPU No. 1-D survey.

PROPOSAL: Replace the 3-1/2" O.D. steel tubing with 2.82" O.D. medium heavy service (1200 PSI WP) fiber glass tubing. Run tubing open ended (no packer). Displace casing annules with 44° gravity crude.

ESTIMATED COST

Pulling Unit, 10 hrs. at $33.50 per hr.	$ 350.00
3275' of 2.82" O.D. 1.37# 8rd. EUE Fiber Glass Tubing (1200 PSI WP) at $1.90 ft. plus freight	$ 6,300.00
Misc. Labor, Trucking, and Material	$ 500.00
TOTAL ESTIMATED COST	$ 7,150.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 2,249.00
Sunoco Company	2.096565%	$ 150.00
Placid Oil Company	33.545035%	$ 2,400.00
Humble Oil and Refining Company	16.335860%	$ 1,167.00
Drilling Specialties	16.225860%	$ 1,167.00
, F. Lundgren	.238210%	$ 17.00

APPROVAL OF EXPENDITURE

Requested by: Approved:

T. James — 3-6-68 Date — /S/ W.J. Thornton — 3-8-68 Date

ch 6, 1968
/sb

A.F.E. No. 0-1501 -10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80-D
SW NW Section 3, T28N, R51E, Roosevelt County, Montana
(Replace Accumulator Vessel)

HISTORY: Converted East Poplar Unit No. 80 to a salt water disposal well in December, 1963. A 107 bbl. internally plastic coated tank was used as the accumulator vessel. The vessel has required complete recoating and patching once and partial recoating and patching a second time. Leaks are reoccurring, showing a need for replacement of the vessel.

PRESENT STATUS: An average of 104,000 BWPM is being disposed of at this well.

PROPOSEL: Replace the present accumulator vessel with a used L-500 redwood tank.

ESTIMATED COST

Wood Tank L-500 - Erected	$ 3,500.
20' X 6" Cement Pad	$ 150
Labor to remove old vessel and hookup new tank	$ 600
Misc. Labor, Material and Trucking	$ 250
TOTAL ESTIMATED COST	$ 4,500

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,415
Placid Oil Company	33.545035%	$ 1,510
Humble Oil and Refining Company	16.335860%	$ 735
Phillips Petroleum Company	16.335860%	$ 735
Munoco Company	2.096565%	$ 94
C. F. Lundgren	.238210%	$ 11

APPROVAL OF EXPENDITURE

Requested by:

M. T. James — 1-20-70 Date

APPROVED:

W. J. Thornton — 1-26-70 Date

MTJ/sb
January 20, 1970

File E. P. U. #80-D

A.F.E. No. 1-1516-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION
EAST POPLAR UNIT NO. 1-D
SE SE Section 30, T29N, R51E, Roosevelt County, Montana
EAST POPLAR UNIT NO. 80-D
SW NW Section 3, T28N, R51E, Roosevelt County, Montana

JUSTIFICATION: The injection pressures have increased and disposal pumps are running 98-100% each day, with only one standby pump.

Well	Date	Pressure	Date	Pressure	Increase
East Poplar Unit No. 1-D	7-70	440 PSI	7-71	480 PSI	40 PSI
East Poplar Unit No. 80-D	7-70	430 PSI	7-71	560 PSI	130 PSI

PROPOSAL: Acidize each well with 1500 gallons 15% HCL with additives to reduce pressure and increase volume. (Both wells to be acidized the same day to reduce total cost.)

ESTIMATED COST

3,000 Gallons Acid and 2 Pump Jobs	$ 2,100
Misc. Labor, Trucking and Material	$ 100
TOTAL ESTIMATED COST	$ 2,200

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 692
Placid Oil Company	33.545035%	$ 738
Humble Oil and Refining Company	16.335860%	$ 359
Phillips Petroleum Company	16.335860%	$ 359
Munoco Company	2.096565%	$ 46
C. F. Lundgren	.238210%	$ 6

APPROVAL OF EXPENDITURE

Requested by:

M. T. James — Date 8-18-71

Approved by:

J. J. Johnson — Date

Alvin Simpson — Date 8/23/71

MTJ/sb
August 18, 1971

Approved 1609

806.25 each well

A.F.E. No. 1-1513-9

AUTHORITY FOR EXPENDITURE

EAST POPLAR UNIT NO. 80-D - SALT WATER DISPOSAL

PRESENT STATUS: Existing pit is used only when the salt water plant is rendered inoperative to keep wells producing and avoid spills.

JUSTIFICATION: Existing pit is leaking and contaminating land. A damage claim was settled last year (1970) for $105.00. The lined pit will reduce the possibility of additional damage.

PROPOSAL: Dig new pit, line with 30 mil Hypalon pit liner and pipe into station building to salvage oil and dispose of salt water. (Pit capacity approximately 2,834 bbls.. Hold 18 hrs..) (In 1971 budget.)

ESTIMATED COST

Fill Oil Pit and Dig New Pit	$ 1,600
84' X 54' 30 Mil Hypalon (Dowell) Liner at $0.40 Sq. Ft.	$ 1,825
Pipe and Connections	$ 400
Labor	$ 400
Misc. Trucking and Material	$ 500
TOTAL ESTIMATED COST	$ 4,725

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.4484707%	$ 1,486
Placid Oil Company	33.5450357%	$ 1,585
Humble Oil & Refining Company	16.3358607%	$ 772
Phillips Petroleum Company	16.3358607%	$ 772
Munoco Company	2.0965657%	$ 99
C. F. Lundgren	.2382107%	$ 11

APPROVAL OF EXPENDITURE

Requested by:

M. T. James. — Date: 5-11-71

Approved by:

J. I. Johnson — Date

Alvin Simpson — Date

MTJ/sb
August 11, 1971

A.F.E. No. 1-1513-9

File

AUTHORITY FOR EXPENDITURE

EAST POPLAR UNIT NO. 80-D - SALT WATER DISPOSAL

PRESENT STATUS: Existing pit is used only when the salt water plant is rendered inoperative to keep wells producing and avoid spills.

JUSTIFICATION: Existing pit is leaking and contaminating land. A damage claim was settled last year (1970) for $105.00. The lined pit will reduce the possibility of additional damage.

PROPOSAL: Dig new pit, line with 30 mil Hypalon pit liner and pipe into station building to salvage oil and dispose of salt water. (Pit capacity approximately 2,834 bbls. Hold 18 hrs.) (In 1971 budget.)

ESTIMATED COST

Fill Oil Pit and Dig New Pit	$ 1,600
84' X 54' 30 Mil Hypalon (Dowell) Liner at $0.40 Sq. Ft.	1,825
Pipe and Connections	400
Labor	400
Misc. Trucking and Material	500
TOTAL ESTIMATED COST	$ 4,725

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,486
Placid Oil Company	33.545035%	1,585
Humble Oil & Refining Company	16.335860%	772
Phillips Petroleum Company	16.335860%	772
Munoco Company	2.096565%	99
C. F. Lundgren	.238210%	11

APPROVAL OF EXPENDITURE

Requested by:

M. T. James — 8-11-71 Date

Approved by:

J. H. Johnson — Date

Alvin Simpson — 9/14/71 Date

MTJ/sb
August 11, 1971

Date Job Completed - 10-26-71
Appox Cost - $3,540.00
By - R.C.B.

Bill Brown

A.F.E. No. 2-1508-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT SALT WATER STATION NO. 3

(Confirming Pump Repair)

This A.F.E. is to confirm the repairs on the Oilwell P-346 Triplex plunger pump at East Poplar Unit Salt Water Station No. 3.

ESTIMATED COST

Parts	$ 3,000
Labor	350
TOTAL ESTIMATED COST	$ 3,350

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 1,054
Placid Oil Company	33.545035%	1,124
Humble Oil and Refining Company	16.335860%	547
Phillips Petroleum Company	16.335860%	547
Munoco Company	2.096565%	70
C. F. Lundgren	.238210%	8

APPROVAL OF EXPENDITURE

Requested by: Approved by:

W. G. Brown 3-29-72 A. W. Simpson 4/4/72

W. G. Brown Date A. W. Simpson Date

WGB/sb
March 29, 1972

[illegible] Completed 3/17/72
Approved [illegible] 3568
By [illegible]

A.F.E. No. 3-1529-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana
NW

Proposal and Justification: It is proposed to acidize this well with 2000 gallons of 28% HCL.

Injection pressure has increased from 480 PSI in February to 580 PSI in August. In an effort to dispose of more water more efficiently this well should be acidized. Injection pressure was 390 PSI on completion while disposing of better than 5000 BWPD.

ESTIMATED COST

2000 Gallons Of Acid and Service	$ 2,250
Misc. Labor, Material and Equipment	250
TOTAL ESTIMATED COST	$ 2,500

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 786
Placid Oil Company	33.545035%	$ 839
Exxon Company, U.S.A.	16.335860%	$ 408
Phillips Petroleum Company	16.335860%	$ 408
Munoco Company	2.096565%	$ 53
C. F. Lundgren	.238210%	$ 6

APPROVAL OF EXPENDITURE

Requested by:

W. G. Brown — 9-11-73 Date

Approved by:

A. W. Simpson — 9/18/73 Date

10/2/23
#2,200

WGB/sb
September 14, 1973

This job went as planned. Pressure annulus above was 580 psi prior to acidizing and was dropped to 440 psi this A.M. (10-3-73). Besides lowering the injection pressure the pump went down 3 strokes than usual.

WGB 10-3-73

A.F.E. No. 4-1520-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana
NW
(Acidize Well)

Proposal and Justification: It is proposed to acidize the Dakota perforations with 2,500 gallons of 28% HCL to remove any scale build up.

Pressure has increased from 400 PSI to 650 PSI causing the disposal pumps to operate a full 24 hours rather than shutting off 3 to 5 hours per day. In an attempt to dispose of more water at a lower pressure this well should be acidized.

ESTIMATED COST

2,500 Gallons of 28% HCL and Services	$ 2,500
Misc. Labor, Trucking and Supervision	$ 500
TOTAL ESTIMATED COST	$ 3,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 943	502
Placid Oil Company	33.545035%	$ 1,006	537
Exxon Company, U.S.A.	16.335860%	$ 490	261
Phillips Petroleum Company	16.335860%	$ 490	261
Munoco Company	2.096565%	$ 63	34
C. F. Lundgren	.238210%	$ 8	4

APPROVAL OF EXPENDITURE

Requested by:

W. G. Brown — Date

Approved by:

A. W. Simpson — Date 6/11/74

Pumped 1,500 Gallons of acid into tubing 800# Pressure Let soak 2 hours Displaced with 340 barrels water at 5.4 BPM down to 4.0 BPM Pressure 800# throughout

Pumped 1,000 Gallons of acid into tubing Displaced with disposal pump

Pressure Before Treatment 660#
Pressure After Treatment 460#

Date Job Completed 6-21-73
Approximate Cost $2,800
By Floyd O'Brien

WGB/sb
June 5, 1974

REC. FEB. JAN 31 1977

A.F.E. No. 7-1501-10

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana
(Acidize Well)

It is proposed to treat the Dakota perforations with 2,000 gallons of 28% HCL acid.

The injection pressure has increased to 830# with both the Oilwell and National J-60 pumps on. It is hoped that this treatment will drop the pressure to the 600# range.

ESTIMATED COST

2000 Gallons of 28% Acid	$ 1,500
Supervision and Misc.	$ 100
TOTAL ESTIMATED COST	$ 1,600

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 503
Placid Oil Company	33.545035%	$ 537
Exxon Company, U.S.A	16.335860%	$ 261
Phillips Petroleum Company	16.335860%	$ 261
Munoco Company	2.096565%	$ 34
C. F. Lundgren	.238210%	$ 4

APPROVAL OF EXPENDITURE

Requested by:

Billy G. Melear — Date 1-[illegible]-77

Approved by:

A. M. Simpson — Date 1/25/77

A.F.E. No. 7-1501-10-S1

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana
(Supplement No. 1 - Acidize Well)

This A.F.E. was overspent because of the increase in cost of services and materials.

COST

	A.F.E.	Actual	Supplement
2,000 Gallons of 28% Acid	$1,500	$2,422	$ 922
Supervision and Misc.	$ 100	$ 108	$ 8
Total Cost	$1,600	$2,530	$ 930

APPORTIONMENT OF TOTAL COST

Murphy Oil Corporation	31.448370%	$ 503	$ 796	$ 293
Placid Oil Company	33.545035%	$ 537	$ 849	$ 312
Exxon Company, U.S.A.	16.335860%	$ 261	$ 413	$ 152
Phillips Petroleum Co.	16.335860%	$ 261	$ 413	$ 152
Munoco Company	2.096565%	$ 34	$ 53	$ 19
C. F. Lundgren	.238210%	$ 4	$ 6	$ 2

APPROVAL OF EXPENDITURE

Requested by:

Billy C. Melear — Date

Approved by:

A. W. Simpson — Date

REC. PROD. JUN 30 '78

A.F.E. No. 8-1521-10

MURPHY OIL CORPORATION
MURPHY OIL CORPORATION - EAST POPLAR UNIT SALT WATER STATION NO. 3
SW SW Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to replace the damaged power end of the National J-60 salt water disposal pump. This replacement is justified since the fluid end is not damaged.

ESTIMATED COST

National J-60 Power Pump End	$ 3,080
Roustabout Labor	$ 250
Misc. and Supervision	$ 100
Total Estimated Cost	$ 3,430

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448370%	$ 1,079
Placid Oil Company	33.545035%	$ 1,151
Exxon Company, U.S.A.	16.335860%	$ 560
Phillips Petroleum Company	16.335860%	$ 560
Munoco Company	2.096565%	$ 72
C. F. Lundgren	.239210%	$ 8

APPROVAL OF EXPENDITURE

Requested by:

Billy G. Melear — Date 6-27-78

Approved by:

A. W. Simpson — Date 6/30/78

SOC)

A.F.E. No. 4-1520-10

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana
(Acidize Well)

Proposal and Justification: It is proposed to acidize the Dakota perforations with 2,500 gallons of 28% HCL to remove any scale build up.

Pressure has increased from 400 PSI to 650 PSI causing the disposal pumps to operate a full 24 hours rather than shutting off 3 to 5 hours per day. In an attempt to dispose of more water at a lower pressure this well should be acidized.

ESTIMATED COST

2,500 Gallons of 28% HCL and Services	$ 2,500
Misc. Labor, Trucking and Supervision	$ 500
TOTAL ESTIMATED COST	$ 3,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 943
Placid Oil Company	33.545035%	$ 1,006
Exxon Company, U.S.A.	16.335860%	$ 490
Phillips Petroleum Company	16.335860%	$ 490
Munoco Company	2.096565%	$ 63
C. F. Lundgren	.238210%	$ 8

APPROVAL OF EXPENDITURE

Requested by:

W. C. Brown — Date

Approved by:

A. W. Simpson — Date

WGB/sb
June 5, 1974

A.F.E. No. 9-1519-10

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to install cathodic protection on this salt water installation.

ESTIMATED COST

Materials	$ 1,100
Labor To Install Equipment	$ 1,220
Technician To Check & Put Equipment Into Operation	$ 80
Supervision and Misc.	$ 100
Total Estimated Cost	$ 2,500

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 787
Placid Oil Company	33.545035%	$ 839
Exxon Company, U.S.A.	16.335860%	$ 408
Phillips Petroleum Company	16.335860%	$ 408
Monoco Company	2.096657%	$ 52
C. F. Lundgren	.238210%	$ 6

APPROVAL OF EXPENDITURE

Requested by:

Billy G. Melear — Date 11-3-79

Approved by:

A. W. Simpson — Date

0-1516-10
A.F.E. ~~8X1512X10~~

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW ~~SW~~ NW Section 3, T28N, R51E, Roosevelt County, Montana

It is proposed to install cathodic protection on this salt water installation.

ESTIMATED COST

Materials	$ 1,190
Labor to install equipment	1,470
Technician to check & put equipment into operation	93
Supervision and miscellaneous	100
Total Estimated Cost	$ 2,853

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 898
Placid Oil Company	33.545035%	957
Exxon Company, U.S.A.	16.335860%	466
Phillips Petroleum Company	16.335860%	466
Munoco Company	2.096565%	60
C. F. Lundgren	.238210%	6

APPROVAL OF EXPENDITURE

Requested by:

Billy G. Melear 11/8/79

Approved by:

Alvin W. Simpson 11/13/79
Date

BGM:CDF:ch
March 13, 1980
(OFD)

Approximate cost

RECD. OCT 24 1980

A.F.E. No. 0-1516-10-S1

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW SW Section 3, T28N, R51E, Roosevelt County, Montana

Labor to install cathodic protection was considerably less than originally estimated.

ESTIMATED COST

	Original A.F.E.	Actual Cost	Over (Under)
Materials	$ 1,190	$ 1,135	($ 55)
Labor To Install Equipment	$ 1,470	$ 827	($ 643)
Technician To Check & Put Equipment Into Operation	$ 93	$ 93	------
Supervision and Miscellaneous	$ 100	$ 176	$ 76
Total Estimated Cost	$ 2,853	$ 2,231	($ 622)

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	$ 898	$ 702	($ 196)
Placid Oil Company	33.545035%	$ 957	$ 748	($ 209)
Exxon Company, U.S.A.	16.335860%	$ 466	$ 364	($ 102)
Phillips Petroleum Company	16.335860%	$ 466	$ 364	($ 102)
C. F. Lundgren	.238210%	$ 6	$ 6	
Munoco Company	2.096565%	$ 60	$ 47	($ 13)

APPROVAL OF EXPENDITURE

Requested by:

Billy G. Melear — 10-21-80 Date

Approved by:

H. W. Simpson — 10/20/80 Date

Last 5/6
Beg 5/4

REC. PROD. APR 27 1984

A.F.E. No. 4-1506-10

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW NW SECTION 3, T28N, R51E, ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

This SWD well needs to have tubing and packer in it. It presently has 3193' of 2 7/8" fiberglass tubing in it. It is doubtful if this tubing can be unscrewed. It is proposed to run 3200' of 2 7/8" tubing and a coated A-D-1 Baker packer with the packer set at 3205'.

ESTIMATED COST

Rig	$ 2,000
Water truck	400
Tubing	9,500
Packer	2,500
Roustabout	1,100
Supervision and Miscellaneous	500
TOTAL ESTIMATED COST	$ 16,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	31.448470%	$ 5,032
Petro-Lewis Corporation	33.545035%	5,367
Exxon Company, U.S.A.	16.335860%	2,614
Phillips Petroleum	16.335860%	2,614
Munoco Company	2.096565%	335
C. F. Lundgren	.238210%	38

APPROVAL OF EXPENDITURE

Requested by: Approved by:

Raymond Reede — Date — A. W. Simpson — Date 4/27/84

RR/jh
April 24, 1984

(OFD)

DATE JOB COMPLETED 8-9-84
$ 20478.00
RR

Dog 12/3/84

A.F.E. NO. 4-1506-10-S1

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 80-D
SW NW SECTION 3, T28N, R51E, ROOSEVELT COUNTY, MONTANA

This A.F.E. was overspent because the coated tubing cost was more than anticipated.

ESTIMATED COST

	Original	Actual	Supplement #1
Rig	$ 2,000	$ 1,594	$ (406)
Water Truck	400	585	185
Tubing	9,500	14,431	4931
Packer	2,500	2,305	(195)
Roustabout	1,100	647	(453)
Supervision & Miscellaneous	500	916	416
TOTAL ESTIMATED COST	$ 16,000	$ 20,478	$ 4478

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	31.448470%	5,032	6,440	1,408
Petro-Lewis Corporation	33.545035%	5,367	6,869	1,502
Exxon Company, U.S.A.	16.335860%	2,614	3,345	732
Phillips Petroleum	16.335860%	2,614	3,345	732
Munoco	2.096565%	335	429	94
C. F. Lundgren	.238210%	38	50	10

APPROVAL OF EXPENDITURE

Requested by:

Raymond Reede — Raymond Reede — 11/28/84 Date

Approved by:

A. W. Simpson — A. W. Simpson — 12/3/84 Date

RR/jh
November 28, 1984

A.F.E. No. 2-0400-010
(REVISION - AFE NO. ONLY)

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT 80-D
SW NW SECTION 3, T28N, R51E
ROOSEVELT COUNTY, MONTANA

REPAIR OF SWD PUMP

PROPOSAL & JUSTIFICATION:

The power end on this SWD pump was starting to get noisy. Upon inspection, it was found the slides in the power end were bad, the cross head pins and bushings were bad and all bearings were wore.

The power end on this pump was completely rebuilt and equipped with Kevlar Packing and stainless steel plungers.

ESTIMATED COST

National-Oilwell Machine work and new parts -----	$19,200
Roustabout ----------	500
Supervision & Miscellaneous ----------	300
TOTAL ESTIMATED COST	$20,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	60.363718%	$12,073
Doil Oil & Gas	20.965647%	4,193
Exxon Company U.S.A.	16.335860%	3,267
Munoco Company	2.096565%	419
C.F. Lundgren	.238201%	48

APPROVAL OF EXPENDITURE

Requested by:

Raymond Reede 1-9-92
Raymond Reede Date

Approved by:

Sidney M. Campbell 1-13-92
Sidney Campbell Date

Paul E. Ramsey 1-13-92
Paul Ramsey Date

RR/jh
January 9, 1992

DATE JOB COMPLETED_____
APPROXIMATE COST_____
BY_____

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION

RECEIVED
JUL 22 1958
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 16, 1958

Following is a { ~~Notice of Intention to Workover~~ / report of work done } on land { ~~lease~~ / leased } described as follows:

LEASE EPU #3649 (Allotted de Urena 1-37-Ind-12914)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW NW Sec. 3 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from { N / ~~S~~ } line and 660 ft. from { ~~E~~ / W } line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Approved subject to conditions on reverse of form U.S.G.S. approved 7-18-58

Date 7-21-58

By John R Hogg Dist Supt
Title
District Office Agent

Company MURPHY CORPORATION

By M H James

Title Field Production Superintendent

Address Poplar, Montana

RECEIVED
JUL 18 1958
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M.

OVER

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
MAR 24 1959
OIL AND GAS CONSERVATION COMMISSION
THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	XX	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 17, 1959

Following is a {notice of intention to do work} on land {leased} described as follows:

LEASE 1-37-Ind-12914 (deUrena)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW SW NW Section 3 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1982 ft. from {N} line and 761 ft. from {W} line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Re-acidize the "A" Zone (5456-5474') with 3000 gallons Howco HvAcid. Acidize down casing annulus, pump test.

RECEIVED
MAR 19 1959
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS

Approved subject to conditions on reverse of form

Date 3-23-59

By John Pilcher
Title
District Office Agent

Company Murphy Corporation

By M. H. Jones

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
APR 17 1959
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	XXX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 25, 1959

Following is a { report of work done } on land { leased } described as follows:

LEASE 1-37-Ind-12914 (deUrena)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW SW NW Section 3 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1982 ft. from { N / XXX } line and 761 ft. from { XXX / W } line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS

RECEIVED
APR 7 1959
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approved 3-27-59
Approved subject to conditions on reverse of form

Date 4-15-59

By John L. Hogg
Title
District Office Agent

Company Murphy Corporation

By M. H. James

Title Field Production Supt.

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
APR 26 1960
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Notice of Intention to Workover	XXX		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 14, 1960

Following is a {notice of intention to do work} on land {leased} described as follows:

LEASE 1-37-Ind-12914 (deUrena)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW SW NW (m. sec.) Section 3 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1982 ft. from {N} line and 761 ft. from {W} line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

The production has dropped to 3 BOPD from the "A" Zone perforations (5456' to 5474'). Workover to perforate the "A" Zone at 5492' with Dowell abrasive jet 2 holes, 180° apart, acidize with 500 gallons, acidize through retrievable packer to isolate perforation 5456-74'. Test and produce co-mingled, the "A" Zone perforations 5456'-74' and 5492'.

RECEIVED
APR 1 3 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form 4-27-60

Date 4-25-60

By [signature] Title

District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address P. O. Box 547, Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
MAY 16 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	XX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 9, 19 60

Following is a { ~~Notice of Intention to Change Plans~~ / report of work done } on land { ~~Deeded~~ / leased } described as follows:

LEASE 1-37-Ind-12914 (deUrena)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW SW NW (m. sec.) Section 3 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1982 ft. from { N / ~~S~~ } line and 761 ft. from { ~~E~~ / W } line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See attached sheets.

RECEIVED
MAY 12 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approval 5-12-60.
Approved subject to conditions on reverse of form

Date 5-13-60.

By _____
Title
District Office Agent

Company MURPHY CORPORATION

By W. H. Jones

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
OCT 1 1962
OIL AND GAS CONSERVATION COMMISSION
THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well (Temp.)	XX	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 24, 1962

Following is a {notice of intention to do work} on land {leased} described as follows:

LEASE 1-37-Ind-12914 (deUrena)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 80 SW SW NW Section 3 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1982 ft. from {N} line and 761 ft. from {W} line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069'

RECEIVED
SEP 2 4 1962
OIL AND GAS CONSERVATION COMMISSION - BILLINGS
OF THE STATE OF MONTANA

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

EPU #80. Completions have been attempted & made in the following intervals:

Perforations	Accum. Prod.	Status
5456-5474 (Completion)	47,982 BO, 58,390 BW	Depleted
5492 (WO #3)	187 BO, 9,110 BW	Temporarily Abandoned

EPU #80 has been temporarily abandoned due to production depletion below economical limits. Casing will not be pulled or well plugged until further evaluation studies are made to determine possible use as a pressure maintenance or S.W. Disposal Well.

Approved subject to conditions on reverse of form USGS Sept 26, 62

Date Sept 28 1962

By R M Watkins
Title
District Office Agent

Company Murphy Corporation

By W. H. Jones

Title Field Production Supt.

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form No. 2.
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
OCT 2 - 1963
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Convert to Disposal	XXXXXX		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 30, 1963

Following is a {notice of intention to do work} on land {~~owned~~ leased} described as follows:

LEASE A.L. 12914

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 80 SW NW Section 3 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 1982 ft. from {N ~~S~~} line and 761 ft. from {E ~~W~~} line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069' KB.

RECEIVED
OCT 1 - 1963
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

HISTORY: Completed July 29, 1956 from the A Zone (5656-74'). Three workovers failed to maintain commerical production, depleted and temporarily abandoned April 1960 pumping at the rate of 7 BOPD, 361 BWPD, uneconomical. From drill stem test structural position etc. there is no known formation capable of commerical production.

To comply with Montana Oil & Gas Commission Order #10-62. Additional disposal capacity is needed to dispose of the salt water produced from East Poplar Unit Wells.

PROPOSAL: To convert EPU #80 to #80-D Disposal into the Dakota Sand. Set cast iron bridge plug at 5300' with 1 sack cement.. Cement block squeeze the Dakota Sand 3590' and 3185', selectively perforate and water frac the Dakota Sand. 3218-50', 3284-3410' and 3500-50'. Run 3-1/2" tubing and set on retreivable packer at 3150'.

Approved subject to conditions on reverse of form

Date Oct 1, 1963

By P M Watkins
Title
District Office Agent

Company Murphy Corporation

By M L Jones

Title Field Production Superintendent

Address P. O. Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

U. S. GEOLOGICAL SURVEY
RECEIVED
OCT 1 1963
BILLINGS, MONTANA

1. OIL WELL ☐ GAS WELL ☒ OTHER

2. NAME OF OPERATOR: **Murphy Corporation**

3. ADDRESS OF OPERATOR: **P.O. Box 547, Poplar, Montana**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: **1982' from N line and 761' from W line of Section 3**

5. LEASE DESIGNATION AND SERIAL NO.: ~~14-20-603-1-37-IND-~~ **A-L. 12914**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME: **East Poplar**

8. FARM OR LEASE NAME:

9. WELL NO.: **EPU #80**

10. FIELD AND POOL, OR WILDCAT: **East Poplar Unit**

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: **Section 3, T28N, R51E, SW NW**

12. COUNTY OR PARISH: **Roosevelt**

13. STATE: **Montana**

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): **2069 KB.**

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other) **Convert to Disposal**			☒	(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

HISTORY: Completed July 29, 1956 from the A Zone (5656-74'). Three workovers failed to maintain commerical production, depleted and temporarily abandoned April 1960 pumping at the rate of 7 BOPD, 361 BWPD, uneconomical. From drill stem test structural position etc. there is no known formation capable of commerical production.

To comply with Montana Oil & Gas Commission Order #10-62. Additional disposal capacity is needed to dispose of the salt water produced from East Poplar Unit Wells.

PROPOSAL: To convert EPU #80 to #80-D Disposal into the Dakota Sand. Set cast iron bridge plug at 5300' with 1 sack cement. Cement block squeeze the Dakota Sand 3590' and 3185', selectively perforate and water frac the Dakota Sand. 3218-50', 3284-3410' and 3500-50'. Run 3-1/2" tubing and set on retreivable packer at 3150'.

Approved OCT 2 1963
(ORIG. SGD.) HILLARY A. ODEN
District Engineer

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY M. T. JAMES TITLE **Field Production Superintendent** DATE **September 30, 1963**

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.
RECEIVED
JAN 30 1964
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Report of Workover	XXXX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 27, 1964

Following is a {report of work done} on land {leased} described as follows:

LEASE A.L. 12914

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 80 SW NW Section 3 (m. sec.) T28N (Township) 51E (Range) MPM (Meridian)

The well is located 1982 ft. from {N} line and 761 ft. from {E} line of Sec. 3

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2069 KB

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

RECEIVED
JAN 2[illegible] 1964
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA, BILLINGS

See attached workover sheet.

Approved subject to conditions on reverse of form

Date 1-29-64

By [signature] Title

District Office Agent

Company Murphy Oil Corporation

By [signature]

Title Field Production Superintendent

Address P.O. Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Filed

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

5. LEASE DESIGNATION AND SERIAL NO.: I-37-IND-12914

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Fort Peck

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME: East Poplar

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME:

3. ADDRESS OF OPERATOR: Poplar, Montana

9. WELL NO.: EPU #80

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1982' from N line and 761' from W line of Section 3

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW NW Section 3, T28N, R51E

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2069 KB.

JAN 28 1964
BILLINGS, MONTANA

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)		Workover	XX
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

See attached workover sheet.

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY M. T. JAMES TITLE Field Production Superintendent DATE January 27, 1964

(This space for Federal or State office use)

APPROVED BY (ORIG. SGD.) HILLARY A. OTHEN TITLE DISTRICT ENGINEER DATE JAN 28 1964

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.
I-37-IND-12914

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Assinboine-Sioux

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

MAR 1993
RECEIVED
BOARD OF OIL & GAS CONS.
STATE OF MONT.
BILLINGS

1. OIL WELL ☐ GAS WELL ☐ OTHER Disposal

7. UNIT AGREEMENT NAME
East Poplar Unit

2. NAME OF OPERATOR
Murphy Oil USA, Inc.

8. FARM OR LEASE NAME
East Poplar Unit

3. ADDRESS OF OPERATOR
P.O. Box 547, Poplar, MT 59255

9. WELL NO.
80-D

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.)
At surface
1982' from North line and 761' from West line

10. FIELD AND POOL, OR WILDCAT
East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
SW NW Sec. 3, T28N, R51E

14. PERMIT NO. EPA# MTS21PE-0026

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
2069'KB

12. COUNTY OR PARISH
Roosevelt

13. STATE
MT

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other) Emergency Pit Approval			X
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

1. Type of pit: Emergency salt water pit
2. Size of pit: 72' x 42' x 6'
3. Location of pit: SW NW Section 3, T28N, R51E
4. Plumbing to pit: Schematic attached
5. In cut or fill material: Cut Material
6. Fencing: 4' mesh
7. Pit lined: Yes
8. Any problems, potential problems or corrective action required? No

18. I hereby certify that the foregoing is true and correct

SIGNED Raymond Reede TITLE District Manager DATE 9-8-88

(This space for Federal or State office use)

APPROVED BY Arnold E. Danzen TITLE ADM-MINERALS DATE SEP 13 1988

CONDITIONS OF APPROVAL, IF ANY:

See Attached for Conditions of Approval

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

Received Poplar
11-05-91

Ref: 8WM-DW

OCT 31 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P. O. Box 547
Poplar, MT 59255

RE: UNDERGROUND INJECTION CONTROL (UIC)
EPA Permit No. MT2026-00026
East Poplar Unit (UPU) No. 80-D
Roosevelt County, Montana

Dear Mr. Reede:

Staff members of the Environmental Protection Agency's (EPA), UIC Implementation Section, reviewed the August 8, 1991, Halliburton Differential Temperature Log and Halliburton Fluid Travel Log for the EPU No. 80-D. They concluded that the Temperature Log shows characteristics which indicate there may be flow behind the longstring above the perforations, and that this flow may extend as high as 3100 feet kelly bushing (KB). The absence of a shut-in Temperature Log makes it difficult to conclusively evaluate conditions behind the pipe. We suggest that a Temperature Log be run after a minimum shut-in time of six (6) hours. We also suggest that the log run commence farther up the hole, i.e., at 150 feet KB, which is the top of the only underground source of drinking water (USDW) identified in the EPU No. 80-D. We also require that an explanation of the cause for the "tool log spike" shown on the Temperature Log be included in the logging report.

The Radioactive Tracer Log continues to be inconclusive. Murphy Oil USA did not utilize the procedural tracer survey guidelines approved by the EPA for detection of flow behind pipe (copy enclosed). The approved method calls for logging the well during injection to monitor the change and movement of the radioactive slug with time. The determination of fluid flow behind the casing would involve the following action:

a) Place radioactive slug at least 20 feet above injection perforations during injections at a constant rate with a surface pressure close to the normal operating pressure;

b) Make overlapping logs of the slug as it moves into the perforations;

c) After the slug has moved into the perforations, make several logs up the hole to a point above the disposal zone confining interval; and

d) Logging should continue until the slug has completely disappeared.

It is observed that neither Halliburton nor Murphy Oil supplied key information on the logs which are necessary for the logs interpretation. Information which must be supplied includes:

a) The actual injection rate and pressure;

b) The approximate down hole velocity used to estimate approximate flow time of the slug into the formation; and

c) A narrative of how the log was run and what the results mean.

Murphy Oil USA, Inc. must conduct a new Radioactive Tracer Survey and Differential Temperature Survey within ninety (90) days of receipt of this letter. If you have any questions in regard to this action or with test procedures, please contact Emmett Schmitz at (303) 293-1436. Please send all communication to the ATTENTION: EMMETT SCHMITZ citing MAIL CODE: 8WM-DW very prominently.

Sincerely,

for Max H. Dodson, Director
Water Management Division

Enclosure: Accepted Radioactive Tracer Survey Guideline and Procedure.

cc: Jim Boyter, MO

Debi Madison
Fort Peck Assiniboine & Sioux Tribes
Office of Environmental Protection
Box 1027
Poplar, MT 59255

Accepted Radioactive Tracer Survey Guidelines & Procedures

The purpose of running a radioactive tracer survey (RATS) in an injection well is twofold:

1. To show whether injected fluids will leak through a hole or holes in the casing above the casing shoe; and/or

2. To show whether injected fluids will migrate vertically outside the casing after reaching the casing shoe.

GUIDELINES:

(a) The gamma ray log may be run up to 60 feet/minute at a time constant (TC) of 1 second or up to 30 ft/min at a TC of 2 sec or up to 15 ft/min at a TC of 4 sec. INDICATE LOGGING SPEED AND TIME CONSTANT on the log heading.

(b) INCLUDE A COLLAR LOCATOR for depth control.

(c) Vertical scale may be 1 inch, 2 inches, or 5 inches per 100 ft.

(d) INDICATE IN API UNITS THE HORIZONTAL SCALE. If one gamma ray curve is recorded, make sure the sensitivity used is such that the tracer material will be obvious when detected and will not be confused with normal "hot spots" in the formations (i.e. gamma ray sensitivity should be such that lithology can be correlated).

(e) INDICATE BEGINNING AND ENDING CLOCK TIMES on each log pass.

(f) INDICATE INJECTION RATE (if any) during each log pass.

(g) INDICATE VOLUME OF FLUID INJECTED between log passes.

(h) INDICATE VOLUME AND CONCENTRATION OF EACH SLUG of tracer material.

PROCEDURE:

(1) Run a base log from below the perforated interval (and/or the injection zone) to at least 500 feet above the zone (or to at least above the confining zone).

(2) Pump tracer material in and trace the slug with the gamma ray tool. Run short OVERLAPPING log passes following the tracer downhole. It is suggested that pumping not occur during logging; that is, pump only to move tracer downhole between log passes to prevent premature loss of the tracer.

(3) As soon as the tracer reaches the injection zone, stop pumping (or slow as much as possible) and run a log from below the perforated interval (and/or the injection zone) to 500 feet above the injection zone (or to at least above the confining zone).

(4) As tracer is pumped (at or near the maximum proposed injection pressure and rate) out of the casing into the wellbore, run a few short log passes from an appropriate distance below the slug depth to an appropriate distance above the slug depth, showing the pathway the tracer follows. Continue running passes UNTIL THE TRACER VIRTUALLY DISAPPEARS. The last pass should essentially duplicate the base log.

(5) More than one pass may be shown on a log segment as long as each gamma ray curve along with its collar locator is distinguishable. Otherwise, make each pass on a separate log segment.

(6) An interpretation of the log must be supplied by the logging company.

(7) Include a schematic diagram of the well on the log. The diagram should show the casing diameters and depths, tubing diameter and depth (if any), perforated intervals or open hole, and total or plugged back depth. Indicate the pathway the tracer material appears to have taken using arrows.

MURPHY
OIL USA, INC.

POST OFFICE BOX 547
POPLAR, MONTANA 59255

September 3, 1991

Mr. Emmett Schmitz
United States Environmental Protection Agency
Region VIII - Suite 500
999 18th Street
Denver Colorado 80202-2405

RE: EPU Permit No. MT2026-00026
East Poplar Unit No. 80-D

Dear Mr. Schmitz:

We reran the Differential Temperature Log (DTL) and the Tracer Survey on 80-D. These logs are enclosed.

Sincerely,

Raymond Reede
District Manager

Enclosures
cc: Jim Boyter
Debi Madison
Paul Ramsey

SPUR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

FINAL

UNDERGROUND INJECTION CONTROL AQUIFER EXEMPTION

Related to UIC Permit Number: MTS21PE-0026

In compliance with provisions of the Safe Drinking Water Act, as amended, (42 U.S.C. 300f-300j-9, commonly known as SDWA) and attendant regulations incorporated by the U. S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations,

The Dakota Sandstone located:

1.) vertically from 3,218 to 3,512 feet below ground level, and

2.) Laterally within one-half mile radius from the injection well (commonly called EPU 80-D) located NE/4, SW/4 Section 3, Township 28 North, Range 51 East of Roosevelt County, Montana,

is exempted as an Underground Source of Drinking Water.

This aquifer exemption is expanded in conjunction with the Underground Injection Control Permit issued to Murphy Oil USA, Inc. of El Dorado, Arkansas, for the injection of water for disposal purposes.

This aquifer exemption has no expiration date.

Signed this 31st day of March, 1986.

Max H. Dodson, Director
Water Management Division

Form 9–1928
(Nov. 1977)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NOTICE OF INCIDENTS OF NONCOMPLIANCE DETECTED

page of

Lease No: East Poplar Unit

Date: 7-1-81

U.S.G.S. Office: Billings, MT 59103	Operator: Murphy Oil Corp	Time (24-hour clock):
Address: P.O. Box 2550	Address: Poplar, MT	
Site: F-BAT EPU	To (company representative): Ray Reede	

THE FOLLOWING LIST OF INCIDENTS OF NONCOMPLIANCE WERE FOUND BY U.S. GEOLOGICAL SURVEY INSPECTORS ON THE DATE AND AT THE SITE LISTED ABOVE.

WARNING IS HEREBY GIVEN TO CORRECT THE FOLLOWING DEFICIENCIES:

Incident of Noncompliance (INC)	Corrective Action Taken	Date
Cleanup excessive oil spillage	cleaned up oil	7-8-81
Around F-Battery - After all	& reditched location	
Oil and wtr is removed and location		
Dried, cover with clean Dirt.		
Repair ruptured line between	Repaired leak &	
well 80D and F-Battery	reditched	
Reclaim all Oil spilled and	cleaned out pit	7-16-81
contained in pit and surrounding		
area around well 80-D.		
Seal all load lines (2) and Oil Dump	seals on lines	7-3-81
And recycle lines on 2 tanks		

(If more space is needed attach separate sheet)

YOU ARE HEREBY ORDERED TO SUSPEND (SHUT-IN) THE FOLLOWING OPERATION(S):
(Related INC marked with asterisk*) NOT SUSPENDED: However, all seals must be in place within 72 HRS or Fed seals will be used.

Signature of U.S.G.S. Representative: [signature] Date: 7-1-81 Time:

Each incident of noncompliance listed must be corrected within (15) days. for cleanup and repair, 72 HRS on seals
The date each incident of noncompliance was corrected must be reported to the U.S.G.S. office at the address shown within (*) days from the date of this Notice.

No operation suspended by this order may be resumed until the corrective action has been inspected by the U.S.G.S.

Failure to suspend an operation as ordered, to correct the cited deficiencies within the prescribed time, or to report the corrective action within the prescribed time can result in further enforcement actions being taken in accordance with Title 30 Code of Federal Regulations.

AUTHORIZATION TO RESUME OPERATION
Signature of U.S.G.S. Representative: Date: Time:

DUPLICATE INVOICE

Form 4 UIC

EPA

UNITED STAT ENVIRONMENTAL PROTECTION AGENCY
UNDERG OUND INJECTION CONTROL
P MIT APPLICATION
(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)

Approved. OMB No. 2040-0042, Expires 9-30-86

I. L ID NUMBER | T/A | C

U

READ ATTACHED INSTRUCTIONS BEFORE STARTING
FOR OFFICIAL USE ONLY

Application approved mo day year	Date Received mo day year	Permit/Well Number	Comments
		EPU 80-D	

II. FACILITY NAME AND ADDRESS

Facility Name: East Poplar Unit
Street Address: P. O. Box 547
City: Poplar | State: MT | ZIP Code: 59255

III. OWNER/OPERATOR AND ADDRESS

Owner/Operator Name: Murphy Oil USA, Inc.
Street Address: 200 Peach Street
City: El Dorado | State: AR | ZIP Code: 71730

IV. OWNERSHIP STATUS *(Mark 'x')*

☐ A. Federal ☐ B. State ☒ C. Private
☐ D. Public ☐ E. Other *(Explain)*

V. SIC CODES

VI. WELL STATUS *(Mark 'x')*

☒ A. Operating | Date Started mo: 1 day: 3 year: 64 | ☒ B. Modification/Conversion | ☐ C. Proposed

Permitting Existing Well Approved by Rule

VII. TYPE OF PERMIT REQUESTED *(Mark 'x' and specify if required)*

☒ A. Individual ☐ B. Area

Number of Existing wells	Number of Proposed wells	Name(s) of field(s) or project(s)
		East Poplar Unit

VIII. CLASS AND TYPE OF WELL *(see reverse)*

A. Class(es) *(enter code(s))*	B. Type(s) *(enter code(s))*	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
11 D			

IX. LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT

A. Latitude Deg	Min	Sec	B. Longitude Deg	Min	Sec	Township and Range Twsp	Range	Sec	¼ Sec	Feet from	Line	Feet from	Line
						28N	51E	3	NW	1980	N	660	W

X. INDIAN LANDS *(Mark 'x')*

☒ Yes ☐ No

XI. ATTACHMENTS

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application:

XII. CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
C. Signature	D. Date Signed

Form 23
New 2-92

Submit in triplicate to:

MONTANA BOARD OF OIL AND GAS CONSERVATION
Billings or Shelby Office

Application For Permit To Construct Or Operate An Earthen Pit Or Pond
(Production Facility Only)

New pit ☐ Existing pit ☒

Operator: Murphy EXploration & production Company

Address: P.O. Box 547

City: Poplar State: MT Zip Code: 59255

Telephone Number (406) 768-3612 Telefax Number (406) 768-5497

Lease Name: East Poplar Unit 80-D

Lease Type (Private/State/Federal): Federal

Unit Name: East Poplar Unit

Field or Area: East Poplar

County: Roosevelt

Location of pit - ¼ ¼ Section, Township, and Range: SW NW Sec.3, T28N, R51E

Describe the purpose of the earthen pit or pond (if temporary, indicate anticipated time pit will be in use):

Emergency salt water storage. The only time this pit is used is when there is a problem with the SWD system.

Number and type of wells using this pit: ____ Oil ____ Gas 1 Injection ____ Other (specify)

Average water inflow: 0 bbls./day Maximum pit volume: 4000 bbls.

Describe type and origin of fluids, name and location of source wells, producing formations, and approximate fluid volume contributed by each well:

Salt water from the Heath and Madison Formation from wells in the East Poplar Unit approximately 3400 BWPD

Provide a copy of full water analysis with application for new pits only. Board may require a water analysis for existing pits.

The water analysis must include the date and source of sample (treater, wellhead, pit, etc.), and the name, address, and telephone numbers of laboratories. Standard methods must be used for all collection and testing of samples.

BOARD USE ONLY

Approved (date) MAR 31 1993 Permit Expires ____

By Accepted for record purposes only

Title ____

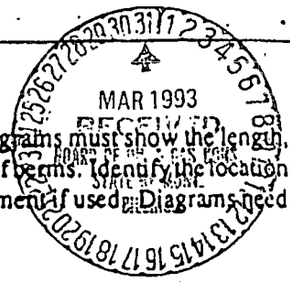
CONDITIONS OF APPROVAL ON REVERSE.

Signed (Agent) Sidney W. Campbell

Typed name and Title Sidney W. Campbell
Staff Operations Coordinator

Date March 30, 1993

SUPPLEMENTAL INFORMATION



tach the following information to this permit application:

)R NEW PITS: Attach diagrams of a top view and two side views of the pit or pond. The diagrams must show the length, dth, depth, cut and fill, maximum fluid level, area of topsoil stockpile, and the height and width of berms. Identify the location additional items such as fences, liners, monitoring wells, tanks, lines, siphons, or other equipment if used. Diagrams need t be prepared by an engineer or surveyor.

)R EXISTING PITS: Attach color 3" x 5" (or larger) photographs of existing pit or pond. Indicate the date photographs :re taken and name and address of the photographer. All photographs must accurately portray the size and condition of the rthen pit or pond at the time this application is submitted.

:scribe the type and amount of material or liner used, if any, to seal the pit or pond. If a synthetic liner is used, indicate the er thickness (mils), bursting strength, tensile strength, tear strength, puncture resistance, hydrostatic resistance, or attach the nufacturer's specification sheet to this application.

30 mill Hypalon pit liner manufacturer specifications enclosed

This pit is covered with a 1" square netting.

:scribe the proposed method of treatment and/or disposal of the liquid and solid contents upon abandonment of the . or pond:

Liquids will be pumped down the SWD well.

Solids will be mixed and diluted with available soil to meet state and Federal regulations.

)TE: The Operator must comply with all applicable federal, state, county, and local laws and regulations concerning : handling, treatment, and disposal of wastes.

is pit or pond was previously permitted by Bureau of land Management (operator(s)) on the 13 / of September, 19 88. Attach a copy(ies) of the previous permit(s).

)ARD USE ONLY	CONDITIONS OF APPROVAL

e operator must comply with the following condition(s):

lure to comply with conditions of approval may void this permit.

Form Approved. OMB No. 2000-0042. Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

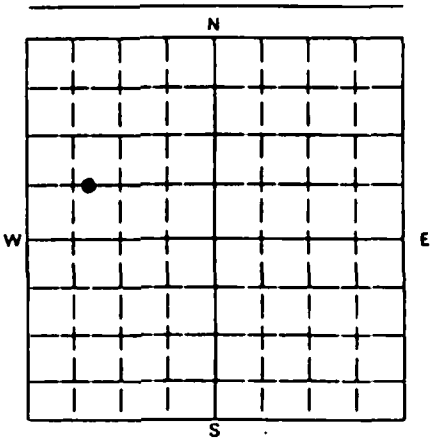
ENVIRONMENTAL PROTECTION AGENCY

MAY 1 1 1999

MONTANA OFFICE

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Murphy EXPRO. P.O. Box 548 Poplar, Mt 59255-0547	H & H Well Service P.O. Box 1244 Poplar, Mt. 59255-1244

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT.	Roosevelt	MTS 2026-0026

SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982' ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

MT00026

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	3575'	☒ Individual ☐ Area Number of Wells 1
Lease Name	Total Depth After Rework: 3575'	Well Number: 80D
	Date Rework Commenced: 5-4-99	
	Date Rework Completed: 505099	

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

Received
Office of Enforcement
MAY 2 6 1999
Compliance & Env. Justice

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals
Hydrotest tubing. Run and set packer.		

REVIEWED
BY: Jac
DATE: 6/10/99

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	May 10, 1999

EPA Form 7520-12 (2-84)

Mechanical Integrity
Casing or Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466

EPA Witness: Deb Madison Date 5/5/99 Time 1:19 am/pm
Test conducted by: H & H; Murphy Oil
Others present: Ray Reede

Well: 80-D Well ID: MT S2026-00026
Field: EPA Company: Murphy Oil USA
Well Location: SW, NW, Sec 3 T28N R51E Roosevelt Co. Address: Murphy P.O. Box 547 Poplar MT 59255

Time	Test #1	Test #2	Test #3
0 min	482 psig	____ psig	____ psig
5	482		
10	482		
15	482		
20	482		
25	482		
30 min	482		
35			
40			
45			
50			
55			
60 min			
Tubing press	____ psig	____ psig	____ psig
Result (circle)	Pass Fail	Pass Fail	Pass Fail

REVIEWED
BY: Jac
DATE: 6/10/99

Signature of EPA Witness: Deb Madison - Ray Reede

See back of page for any additional comments & compliance followup.

This is the front side of two sides

Form Approved. OMB No. 2000-0042. Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

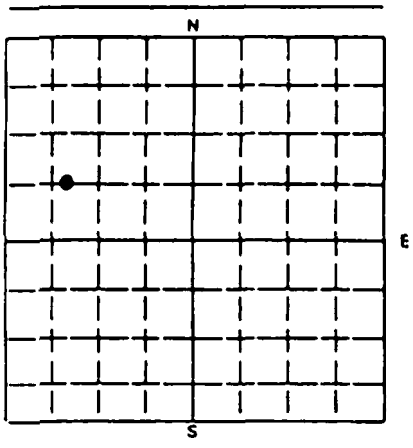
RECEIVED
SEP 17 1998
EPA REGION VIII

NAME AND ADDRESS OF PERMITTEE
Murphy EXPRO
P.O. Box 547
Poplar, MT 59255-0547

NAME AND ADDRESS OF CONTRACTOR
MT00026

STATE: MT
COUNTY: Roosevelt
PERMIT NUMBER: MT52026-0026

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY
- [X] Brine Disposal
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

Lease Name

Total Depth Before Rework: 3575'
Total Depth After Rework: 3575'
Date Rework Commenced: 9-10-98
Date Rework Completed: 9-11-98

TYPE OF PERMIT
- [X] Individual
- [ ] Area

Number of Wells: 1
Well Number: 80-D

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL
USE ADDITIONAL SHEETS IF NECESSARY

Found tubing leak. Ran new packer and hydrotested tubing to 7000#

WIRE LINE LOGS, LIST EACH TYPE

Log Types	Logged Intervals

REVIEWED
BY:

CERTIFICATION

DATE: 10/2/98

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	Sept. 15, 1998

EPA Form 7520-12 (2-84)

Form approved. OMB No. 2040-0042 Approval expires 5-30-86

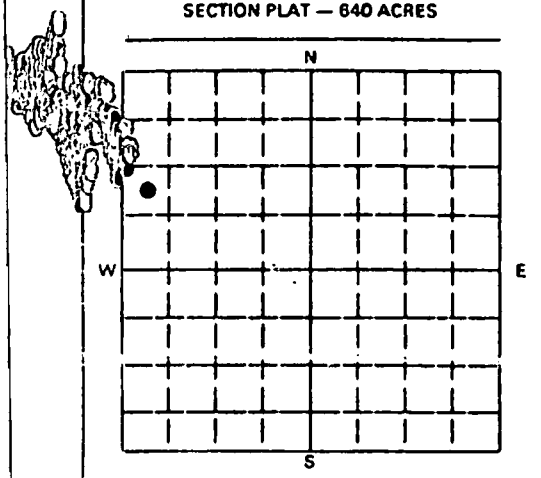
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

WELL REWORK RECORD

RECEIVED
MAY 29 1998
EPA REGION VIII

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Murphy Exploration & Prod. Co. P.O. Box 547 Poplar, MT 59255-0547	Diamond B Trucking, Inc. P.O. Box 567 Plentywood, MT

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	MTS2026-0026

SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	Total Depth After Rework	☒ Individual ☐ Area Number of Wells 1
Lease Name	Date Rework Commenced	Well Number
East Poplar Unit	Date Rework Completed	80-D

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL
USE ADDITIONAL SHEETS IF NECESSARY

Mechanical Integrity Test Attached

WIRE LINE LOGS, LIST EACH TYPE

Log Types	Logged Intervals

REVIEWED
BY:
DATE: 6/3/98

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	5-27-98

EPA Form 7520-12 (2-84)

Form Approved. OMB No. 2000-0042. Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

APPLICATION TO TRANSFER PERMIT

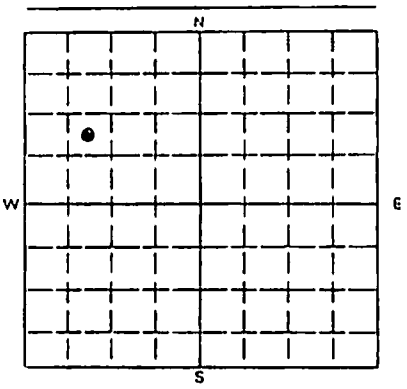
NAME AND ADDRESS OF EXISTING PERMITTEE

Murphy Exploration & Production Co.
P.O. Box 547
Poplar, MT 59255-0547

NAME AND ADDRESS OF SURFACE OWNER

Wilbur Lockman
P.O. Box 175
Poplar, MT 59255-0175

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	MTS2026-0026

SURFACE LOCATION DESCRIPTION

¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	WELL STATUS	TYPE OF PERMIT
☐ Class I	☒ Operating	☒ Individual
☒ Class II	☐ Modification/Conversion	☐ Area
☒ Brine Disposal	☐ Proposed	Number of Wells 1
☐ Enhanced Recovery		
☐ Hydrocarbon Storage		
☐ Class III		
☐ Other		

Lease Name East Poplar Unit Well Number 80-D

NAME(S) AND ADDRESS(ES) OF NEW OWNER(S)

NAME AND ADDRESS OF NEW OPERATOR

Attach to this application a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them.

The new permittee must show evidence of financial responsibility by the submission of surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the director.

Effective change of owner/operator from Murphy Exploration and Production Company to

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Sidney W. Campbell Manager Onshore Operations		

EPA Form 7520-7 (2-84)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
MILES CITY DISTRICT OFFICE
P.O. Box 940
Miles City, Montana 59301

IN REPLY REFER TO:

3160
NTL-2B

MAR 27 '86

Murphy Oil USA, Inc.
P. O. Box 547
Poplar, Montana 59255

RE: NTL-2B Approval for the East Poplar Unit

Gentlemen:

We have received your NTL-2B application dated 12/2/85, for the federal wells within the East Poplar Unit boundaries. BLM regulation requires NTL-2B approval for all wells within a federal unit. We will not require additional NTL-2B application for nonfederal wells within the unit, rather this letter will serve as NTL-2B approval for all existing wells in the East Poplar Unit. Produced water from the unit is approved for disposal into the following wells:

EPU SWD No. 1 EPA ID No. MTS21PE-0022,
EPU SWD No. 80 EPA ID No: MTS21PE-0026,
EPU SWD No. 8 EPA ID No. MTS21PE-0023,
EPU SWD No. 5 EPA ID No. MTS21PE-0021, and
EPU SWD No. 29 EPA ID No. MTS21PE-0024.

The following conditions apply to this NTL-2B approval for the disposal of produced water from the referenced unit:

Receipt of this approval does not constitute EPA approval for subsurface injection.

Upon receipt of EPA approval, a copy of the EPA permit must be submitted to this office.

All unauthorized discharges or spills must be reported to this office in accordance with CFR Title 40, Parts 124, 144, 146, and 147.

For future wells, complete NTL-2B applications will not be required. Instead, a Well Completion Report (Form 3160-4) should be used with a statement referring to NTL-2B approval and an explanation of the water source and disposal facilities (see example attached).

Wells outside the unit boundaries will require separate NTL-2B approval.

Any changes to these approved procedures must be submitted via Sundry Notice (Form 3160-5) prior to the commencement of operations.

If you have any questions, please contact Jamie Connell at (406) 232-4331.

Sincerely yours,

Asst. District Manager
Division of Mineral Resources

United States Department of the Interior

GEOLOGICAL SURVEY
Conservation Division
P.O. Box 2550
Billings, Montana 59103

March 29, 1977

Murphy Oil Corporation
P.O. Box 547
Poplar, Montana 59255

Re: NTL-2B Approval for Salt Water Disposal Wells in the Northeast Benrud Field, East Benrud Field, Volt Field and East Poplar Field, Roosevelt County, Montana

Gentlemen:

We have reviewed your applications concerning approval of the numerous disposal wells. Your applications meet the regulations required under NTL-2B, and approval is hereby given for the following disposal wells:

Mule Creek Allotted No.1-D, Fort Peck (Allotted) 35-009, SW SE, Sec. 20-31N-48E, 928' FSL and 2078' FEL, Northeast Benrud Field;

Wetsit No.1-D, Fort Peck (Allotted) #G 35-072, SW, Sec.36-31N-47E, 1740' FSL and 1740' FWL, East Benrud Field;

Courchene No.1-D, Fort Peck (Allotted) 35-035, SE SW, Sec.4-30N-46E, 801' FSL and 2034' FWL, Volt Field;

East Poplar Unit No.1-D, (Klies) #6104, SE SE SE, Sec.30-29N-51E, East Poplar Field;

East Poplar Unit No.80-D, I-37-IND-12914, SW NW, Sec.3-28N-51E, 1982' FNL and 761' FWL, East Poplar Field;

East Poplar Unit No.8-D, Fort Peck (Allotted) ---Patented, C NW SE, Sec.10-28N-51E, 1980' FSL and 1980' FEL, East Poplar Field;

East Poplar Unit No.5-D, I-37-IND-12856, SE SE, Sec.19-29N-51E, 1205' FSL and 660' FEL, East Poplar Field.

However, approval of the emergency pits that you are requesting cannot be given at this time. Each pit will be inspected individually by a staff member of this office. At the time of this inspection, each pit will be checked to see if it meets the criteria as stated under the section of NTL-2B that deals with emergency pits. We would like to remind you that all emergency pits are to be emptied of all fluids within 48 hours following their use. Each emergency use of the pits is to be reported to this office and approval is needed for the method of disposing of the fluid. Inspection of these pits will take place within 30 days. Also an emergency pit cannot be used as a trash pit.

Sincerely yours,

Virgil L. Pauli

Virgil L. Pauli
District Engineer

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

NOV 0 2 1988

Ref: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Raymond Reede
District Manager
Murphy Oil USA, Inc.
P.O. Box 547
Poplar, MT 59255

RE: NOTICE OF NONCOMPLIANCE
UIC Permit #MTS2026-0026
Murphy East Poplar No. 80-D
SWNW Section 3-T28N-R51E
Roosevelt County, Montana

Dear Mr. Reede:

EPA has revised all UIC permit numbers. Note the captioned well changed from MTS21PE-0026 to your new permit number MTS2026-0026. Please use this revised number in all future correspondence relative to this SWD well.

The last quarterly chemical analysis of injected water submitted to this office was your third quarter report of September 16, 1987. A fourth report was due to this office January 1988. Following submission of that fourth quarter analysis of injected fluids, Murphy can request a minor permit modification to reduce the frequency of analyses to not less than once per year (Page 8, Part II. Section D.1.(c) of the UIC Permit.

A compliance file review on the No. 80-D SWD well indicates that we have no signatory authorization for your signature as a Murphy employee. Please have an officer of Murphy Oil send us a letter authorizing your signature on UIC related documents. Refer to 40 CFR 144.32 for signatory requirements.

Should you have any questions relative to the above comments, please contact Emmett Schmitz, of my staff, at (303) 293-1717 and send the require data to him at the above letterhead address. The requested data must be sent within forty-five (45) days from receipt of this letter.

Sincerely,

Max H. Dodson
Director
Water Management Division

UNDERGROUND INJECTION CONTROL PROGRAM

FINAL PERMIT

Class II Salt Water Disposal Well

Permit # MTS21PE-0026

EPU 80-D, Poplar Field
Roosevelt County, Montana

issued to:

Murphy Oil USA, Inc.
200 Peach Street
El Dorado, Arkansas 71730

Date Prepared: March 28, 1986

TABLE OF CONTENTS

(Table of Contents - Continued) Page

PART I - AUTHORIZATION TO CONSTRUCT AND INJECT

Pursuant to the Underground Injection Control Regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147,

Murphy Oil USA. Inc.
200 Peach Street
El Dorado, Arkansas 71730

is hereby authorized to operate a Class II injection well, commonly known as EPU 80-D, located at 1982 feet from North line and 761 feet from West line of Section 3, Township 28N, Range 51E of Roosevelt County, Montana. Injection shall be for the purpose of brine disposal into the Dakota Sandstone, in accordance with conditions set forth herein.

Injection under permit authorization shall commence upon the effective date of this permit.

All conditions set forth herein refer to Title 40 Parts 144, 146, and 147 of the Code of Federal Regulations and are regulations that are in effect on the date that this permit is effective.

This permit consists of a total of 26 pages and includes all items listed in the Table of Contents. Further, it is based upon representations made by the permittee and on other information contained in the administrative record.

This permit and the authorization to inject are issued for the operating life of the well, unless terminated. The permit will be reviewed by EPA at least every five years to determine whether action under 40 CFR 144.36 (a) is warranted. The permit will expire upon delegation of primary enforcement responsibility for the UIC Program to the State of Montana, unless that State has adequate authority, and chooses, to adopt and enforce this permit as a State permit.

Issued this 31st day of March, 1986.

This permit shall become effective thirty days after date of issuance.

Max H. Dodson, Director
Water Management Division *

* NOTE: The person holding this title is referred to as the "Director" throughout this permit.

PART II. SPECIFIC PERMIT CONDITIONS

A. WELL CONSTRUCTION

1. Casing and Cementing. The construction details submitted with the application comply with Part 146 of the UIC regulations and are hereby incorporated into this permit as Appendix A, and shall be binding on the permittee.

2. Tubing and Packer Specifications. A tubing of two and seven-eighths (2 & 7/8) inches diameter shall be utilized with a packer placed at not less than 3190 feet. Injection between the outermost casing protecting underground sources of drinking water and the wellbore is prohibited. Injection directly through the casing is also prohibited.

3. Monitoring Devices. The operator shall provide and maintain in good operating condition:

(a) a tap on the injection line or tubing for the purposes of obtaining representative samples of the injection fluids,

(b) two one-half (1/2) inch FIP fittings, isolated by plug or globe valves, and located: 1) at the wellhead on the tubing and, 2) on the tubing/casing annulus, and positioned to allow attachment of 1/2 inch MIP gauges;

(c) cumulative volume shall be calculated by the length of time the injection pump is in operation. Calibration of the injection pump shall be done monthly.

4. Proposed Changes and Workovers. The permittee shall give notice to the Director within ten (10) days of any planned physical alterations or additions to the permitted facility. In addition, the permittee shall provide all records of well workovers, logging, or other test data to EPA within sixty (60) days of completion of the activity. Appendix B contains all required reporting forms.

B. CORRECTIVE ACTION

The operator is not required to take corrective action on any well in the area of review prior to the effective date of this permit.

C. WELL OPERATION

1. Transition from Rule to Permit Authorization. This well has been operating by rule since June 25, 1984. Adherence to all requirements under 40 CFR 144, 146 and 147, including construction and mechanical integrity, have been verified for this well. Authorization of injection activities for this well is hereby transferred from rule to permit, as set forth herein, upon the effective date of this permit.

2. Mechanical Integrity (Subsequent to Initial Demonstration).

(a) Method of Demonstrating Absence of Fluid Migration. An injection profile shall be run on the injection well every five years, in order to verify that injected fluids are remaining in the Dakota Sandstone. Such injection profile shall include a radioactive tracer survey and a temperature differential log and shall be run from a distance of at least 250 feet above the injection zone. A copy of the injection profile, with an interpretation of the results shall be submitted to the Director as soon as possible but no later than sixty (60) days after the test has been completed. Such injection profiles and temperature logs shall also be a part of demonstrating continual mechanical integrity as per part (c) of this section.

(b) Method of Demonstrating Absence of Casing Leaks. A demonstration of the absence of significant leaks in the casing, tubing and/or packer must be made by performing a tubing/casing annulus pressure test. This test shall be for a minimum of 45 minutes at: 1) a pressure of 300 psig measured at the surface, if the well is shut-in, or 2) a pressure differential of at least 200 psig, if injection activities are continued during the test. The tubing/casing annulus shall be filled with a non-corrosive fluid (either a non-toxic liquid or the injection fluid) at least 24 hours in advance of the test. Pressure values shall be recorded at five-minute intervals or less. A well passes the mechanical integrity test if there is less than a ten (10) percent decrease in pressure over the 45 minute period, or if method 2 above is used, less than ten (10) percent increase or decrease in the annulus pressure during the 45 minute test period.

(c) Schedule for Demonstrations of Mechanical Integrity. A demonstration of mechanical integrity (pressure test and injectivity profile with temperature log) shall be made at regular intervals, no less frequently than every five (5) years from the effective date of this permit, in accordance with 40 CFR 146.8 and paragraph (a) and (b) above, unless otherwise modified. Initiation of mechanical integrity demonstrations will be according to the following provisions.

(i) It shall be the permittee's responsibility to arrange and conduct the routine five-year demonstrations. The permittee shall notify the Director of his intent to demonstrate mechanical integrity at least thirty (30) days prior to each such demonstration. Results of the test shall be submitted to the Director as soon as possible but no later than sixty (60) days after the demonstration.

(ii) In addition to any demonstration made under paragraph (i) above, the Director may require a demonstration of mechanical integrity at any time during the permitted life of the well.

(d) Loss of Mechanical Integrity. If the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 CFR 146.8 becomes evident during operation, the permittee shall notify the Director in accordance with Part III, Section E. 10. of this permit. Furthermore, injection activities shall be terminated immediately; and operation shall not be resumed until the permittee has taken necessary actions to restore integrity to the well and EPA gives approval to recommence injection.

3. Injection Interval. Injection shall be limited to the Dakota Sandstone. The perforated interval within the Dakota is identified in Attachment G of the permit application as: 3218-3250, 3284-3410 and 3462-3512 feet from Kelly Bushing (KB).

4. Injection Pressure Limitation.

(a) Injection pressure, measured at the surface, shall not exceed 650 pounds per square inch gauge (psig).

(b) The pressure limit in paragraph (a) may be increased by the Director if the fracture pressure of the injection formation will not be exceeded, and the permittee demonstrates that the proposed increase in surface injection pressure is necessary: (1) to overcome friction losses in the injection system, or (2) to inject the volume rate of fluid set by Part II, Section C. 5., below. This demonstration shall be made by performing a step rate injection test, using fluid normally injected, to determine both the instantaneous shut-in pressure and the formation breakdown pressure. The Director will determine any allowable increase based upon the test results and other parameters reflecting actual injection operations.

(c) The permittee shall give thirty (30) days advance notice to the Director if an increase of injection pressure will be sought. Details of the proposed tests shall be submitted at least seven (7) days prior to the tests. Results of all tests shall be submitted to the Director within ten (10) days of the test. Injection at the increased pressure must be approved by the Director, in writing, before the permittee may begin operation at that pressure.

(d) Any approval by the Director for increased pressure limitations as stated in paragraph (b) above, shall be made part of this permit by minor modification without further opportunity for public comment.

5. Injection Volume-Rate Limitation. No more than 4,500 barrels per day of produced brine wastes shall be injected into this well provided further that in no case shall injection pressure exceed that limit shown in Part II, Section C. 4. of this permit.

6. Injection Fluid Limitation. The permittee shall not inject any hazardous substances, per 40 CFR 261, at any time during the operation of the facility, and further, no substances other than those noted in the permit application shall be injected.

7. Annular Fluid. The annulus between the tubing and the casing shall be filled with fluid treated with corrosion inhibitors and oxygen scavengers. The specific additives were identified by the applicant as Nalco 3900 fluid with Nalco 4300 scale inhibitor.

D. MONITORING, RECORDKEEPING, AND REPORTING OF RESULTS

1. Injection Well Monitoring Program. Samples and measurements shall be representative of the monitored activity. The permittee shall utilize the applicable analytical methods described in Table I of 40 CFR 136.3, or in Appendix III of 40 CFR 261, or in certain circumstances, by other methods that have been approved by the EPA Administrator. Monitoring shall consist of:

(a) analysis of the injection fluids, performed:

(i) quarterly for Total Dissolved Solids, pH, Specific Conductivity, and Specific Gravity; and

(ii) whenever there is a change in the source of injection fluids. A comprehensive water analysis shall be submitted to the Director within thirty (30) days of any change in injection fluids.

(b) weekly observations of injection pressure, flow rate and cumulative volume. At least one observation of injection pressure, and volume, shall be recorded at regular intervals no greater than thirty (30) days. Cumulative volumes shall be determined weekly, averaged and recorded monthly and reported annually. These determinations shall be made by calibration of the amount of injection fluid that is pumped during a specific period of time, and multiplied by the amount of time the pump is in operation. Calibration of the pumping rate of the pump shall be made monthly.

(c) The permittee may request that the frequency of analysis in paragraph (a)(i) above, be reduced after the first year if the reduced frequency will yield data representative of the nature of the injected fluids. The reduced frequency shall not be less than once per year.

2. Monitoring Information. Records of any monitoring activity required under this permit shall include:

(a) the date, exact place, the time of sampling or field measurements;

(b) the name of the individual(s) who performed the sampling or measurements;

(c) the exact sampling method(s) used to take samples;

(d) the date(s) laboratory analyses were performed;

(e) the name of the individual(s) who performed the analyses;

(f) the analytical techniques or methods used by laboratory personnel; and

(g) the results of such analyses.

3. Recordkeeping.

(a) The permittee shall retain records concerning:

(i) the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment which has been carried out in accordance with the Plugging and Abandonment Plan shown in Appendix C, and is consistent with 40 CFR 146.10.

(ii) all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit for a period of at least five (5) years from the date of the sample, measurement or report during the operating life of the well.

(b) The permittee shall continue to retain such records after the retention period specified in paragraphs (a)(i) and (a)(ii) unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

4. Reporting of Results. The permittee shall submit an Annual Report to the Director summarizing the results of the monitoring required by Part II, Section D. 1. of this permit. Copies of all monthly records on injected fluids, and any major changes in characteristics or sources of injected fluid shall be included in the Annual Report. The first Annual Report shall cover the period from the effective date of the permit through December 31. Subsequently, the Annual Report shall cover the period of January 1 through December 31, and shall be submitted by January 15 of the following year. Appendix B contains Form 7520-11 which may be copied and used to submit the annual summary of monitoring.

E. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment. The permittee shall notify the Director forty five (45) days before conversion, workover, or abandonment of the well.

2. Plugging and Abandonment Plan. The permittee shall plug and abandon the well as provided in the Plugging and Abandonment Plan, Appendix C of this permit. EPA reserves the right to change the manner in which the well will be plugged if the well is modified during its permitted life or if the well is not made consistent with EPA requirements for construction and mechanical integrity. The Director may ask the permittee to update the estimated plugging cost periodically. Such estimates shall be based upon costs which a third party would incur to plug the well according to the plan.

3. Cessation of Injection Activity. After a cessation of injection into this well for two (2) years, the permittee shall plug and abandon the well in accordance with the Plugging and Abandonment Plan unless the permittee:

(a) provides notice to the Director, and

(b) demonstrates that the well will be used in the future, and

(c) describes actions or procedures, satisfactory to the Director, that will be taken to ensure that the well will not endanger underground sources of drinking water during the period of temporary abandonment.

4. Plugging and Abandonment Report. Within sixty (60) days after plugging the well, the permittee shall submit a report on Form 7520-13 to the Director. The report shall be certified as accurate by the person who performed the plugging operation and the report shall consist of either: (1) a statement that the well was plugged in accordance with the plan, or (2) where actual plugging differed from the plan, a statement that specifies the different procedures followed.

F. FINANCIAL RESPONSIBILITY

1. Demonstration of Financial Responsibility. The permittee is required to maintain financial responsibility and resources to close, plug, and abandon the injection well as provided in the plugging and abandonment plan.

(a) The surety performance bond in the amount of $25,000 underwritten by United States Fidelity and Guaranty Company of Maryland which names EPA as beneficiary in the event of permittee default in the plugging and abandonment requirements, is hereby incorporated as part of this permit. The standby trust agreement established by the permittee shall remain in effect for the duration of this permit.

(b) The permittee may, upon request to the EPA, change the type of financial mechanism or instrument utilized. A change in demonstration of financial responsibility must be approved by the Director. A minor permit modification will be made to reflect any change in financial mechanisms, without further opportunity for public comment.

2. Insolvency of Financial Institution. The permittee must submit an alternative demonstration of financial responsibility acceptable to the Director, within sixty (60) days after either of the following events occur.

(a) the institution issuing the trust or surety bond files for bankruptcy; or

(b) the authority of the trustee institution to act as trustee, or the authority of the institution issuing the surety bond, is suspended or revoked.

PART III. GENERAL PERMIT CONDITIONS

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The permittee, as authorized by this permit, shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or otherwise adversely affect the health of persons. Any underground injection activity not authorized in this permit or otherwise authorized by permit or rule is prohibited. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any enforcement action brought under the provisions of Section 1431 of the Safe Drinking Water Act (SDWA) or any other law governing protection of public health or the environment for any imminent and substantial endangerment to human health, or the environment, nor does it serve as a shield to the permittee's independent obligation to comply with all UIC regulations.

B. PERMIT ACTIONS

1. Modification, Reissuance, or Termination. The Director may, for cause or upon a request from the permittee, modify, revoke, and reissue, or terminate this permit in accordance with 40 CFR Sections 124.5, 144.12, 144.39, and 144.40. Also, the permit is subject to minor modifications for cause as specified in 40 CFR Section 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

2. Transfers. This permit is not transferrable to any person except after notice is provided to the Director and the requirements of 40 CFR 144.38 are complied with. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the SDWA.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and 40 CFR 144.5, any information submitted to EPA pursuant to this permit may be claimed as confidential by the applicant. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public information). Claims of confidentiality for the following information will be denied:

- The name and address of the permittee, and
- Information which deals with the existence, absence or level of contaminants in drinking water.

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply. The permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of SDWA and is grounds for enforcement action, permit termination, revocation and reissuance, or modification. Such noncompliance may also be grounds for enforcement action under the Resource Conservation and Recovery Act (RCRA).

2. Penalties for Violations of Permit Conditions. Any person who violates a permit requirement is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to such actions pursuant to the RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

5. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

6. Duty to Provide Information. The permittee shall furnish the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

7. Inspection and Entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by SDWA any substances or parameters at any location.

8. Records of Permit Application. The permittee shall maintain records of all data required to complete the permit application and any supplemental information submitted for a period of five (5) years from the effective date of this permit. This period may be extended by request of the Director at any time.

9. Signatory Requirements. All reports or other information requested by the Director shall be signed and certified according to 40 CFR 144.32.

10. Reporting of Noncompliance.

(a) Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(b) Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than thirty (30) days following each schedule date.

(c) Twenty four Hour Reporting.

(i) The permittee shall report to the Director any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty four (24) hours from the time the permittee becomes aware of the circumstances by telephoning EPA at 1-800-424-8802. The following shall be included as information which must be reported orally within twenty four (24) hours:

(A) Any monitoring or other information which indicates that any contaminant may cause endangerment to an underground source of drinking water.

(B) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

(ii) A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(d) Other Noncompliance. The permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Part III, Section E. 10.(C)(ii) of this permit.

(e) Other Information. Where the permittee becomes aware that he failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall submit such correct facts or information within two (2) weeks of the time such information became known to him.

APPENDIX A

(Construction Details)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

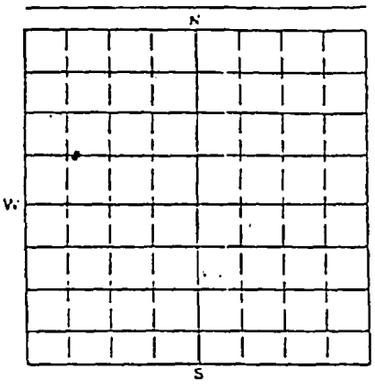
Form Approved
OMB No. 2040-0042
Approval expires 9-30-86

EPA COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

NAME AND ADDRESS OF EXISTING PERMITTEE
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730 EPU 80-D

NAME AND ADDRESS OF SURFACE OWNER
Willbor P. Lockman
Box 175
Poplar, Montana 59255

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 263 ft. from (E/W) W Line of quarter section

WELL ACTIVITY
- [X] Brine Disposal
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [ ] Area
- Number of Wells ____

Estimated Fracture Pressure of Injection Zone: 2490 psig

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet
1700	4500	3218	3512

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	
400	650	Warren Corne Water Well 150'

Type of Injection Fluid *(Check the appropriate block(s))*
- [X] Salt Water
- [ ] Brackish Water
- [ ] Fresh Water
- [ ] Liquid Hydrocarbon
- [ ] Other

Lease Name: EPU
Well Number: 80-D
Name of Injection Zone: Dakota Sand

Date Drilling Began	Date Well Completed
7/2/56	7/29/56

Date Drilling Completed: 7/26/56

Permeability of Injection Zone: Data Not Available
Porosity of Injection Zone: Data Not Available

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter
13 3/8	48# H-40 New	150.14'	175	G-? 1-1 pos mix	195	17½
9 5/8	35# J-55 New	970.93'	400	G-?	990	12¼
5 1/2	15.5# J-55 New	5822.5'	300	G-? 1-1 pos mix	5932	8 3/4
2 7/8	6.5# J-55 New	3189.93'	610	G-?		

INJECTION ZONE STIMULATION		WIRE LINE LOGS, LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
3218-3512	1304 Bbls. Water	Elect Survey 2"	979-5832
		Elect Survey 5"	2000-5832
		Microlog 5"	2000-5831
		Gamma Ray Neutron	2830-5775

Complete Attachments A — E listed on the reverse.

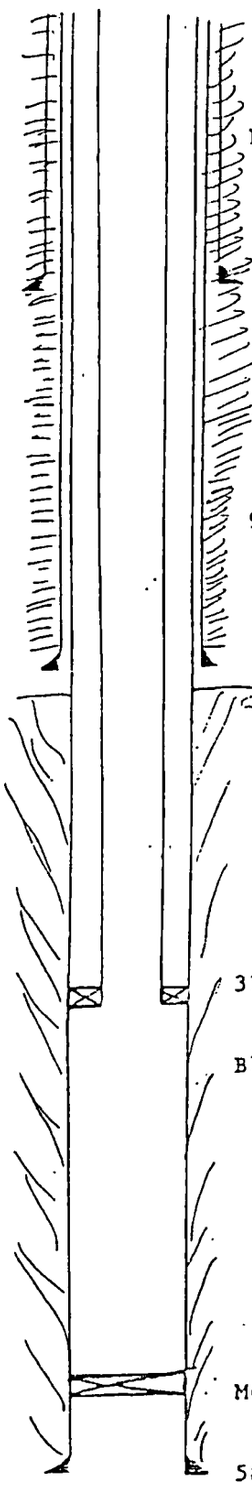
CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*		DATE SIGNED
Alvin W. Simpson Manager of Operations		March 14, 1985

EPA Form 7520-10 (2-84)

?U 80-D Subsurface Well D..ign



150.14' of 13 3/8", 48#, H-40, 8rd. cemented to surface

970.93' of 9 5/8", 35#, J-55, 8rd. cemented to surface

Calc TOC

3189.93' of 2 7/8", 6.5#, J-55 internally coated tubing and coated packer

Block squeeze with 610 sacks cement at 3395'.
Calculated TOC = 1000' 3395 PBTD

Model K cement retainer set at 5300', 1 sack cement on top

5822.5' of 5 1/2", 15.5#, J-55, 8rd. cemented 300 sacks cement

98 joints 2 7/8", 6.5# internally coated tubing with plastic coated packer set at 3203.36

APPENDIX B

(Reporting Forms)

Form Approved. OMB No. 2040-0042
Approval expires 8-31-91

EPA

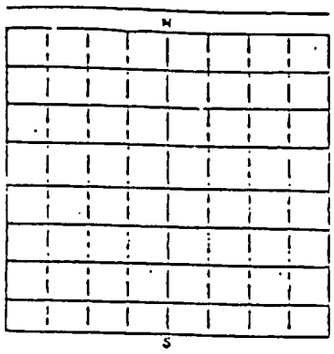
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

APPLICATION TO TRANSFER PERMIT

NAME AND ADDRESS OF EXISTING PERMITTEE

NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE | COUNTY | PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ of ¼ of ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section.

WELL ACTIVITY

- ☐ Class I
- ☐ Class II
  - ☐ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ Class III
- ☐ Other

WELL STATUS

- ☐ Operating
- ☐ Modification/Conversion
- ☐ Proposed

TYPE OF PERMIT

- ☐ Individual
- ☐ Area

Number of Wells ____

Lease Name Well Number

NAME(S) AND ADDRESS(ES) OF NEW OWNER(S)

NAME AND ADDRESS OF NEW OPERATOR

Attach to this application a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them.

The new permittee must show evidence of financial responsibility by the submission of surety bond, or other adequate assurance, such as financial statements or other materials acceptable to the director.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. *(Ref. 40 CFR 122.6).*

NAME AND OFFICIAL TITLE *(Please type or print)* | SIGNATURE | DATE SIGNED

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

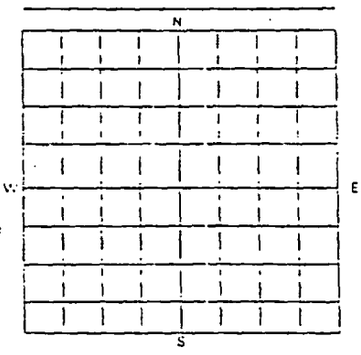
COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

Form Approved
OMB No. 2040-0042
Approval expires 9-30-86

NAME AND ADDRESS OF EXISTING PERMITTEE

NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE | COUNTY | PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

WELL ACTIVITY

- ☐ Brine Disposal
- ☐ Enhanced Recovery
- ☐ Hydrocarbon Storage

TYPE OF PERMIT

- ☐ Individual
- ☐ Area

Number of Wells ____

Estimated Fracture Pressure of Injection Zone

Anticipated Daily Injection Volume (Bbls) | Injection Interval

Average | Maximum | Feet | to Feet

Anticipated Daily Injection Pressure (PSI) | Depth to Bottom of Lowermost Freshwater Formation (Feet)

Average | Maximum

Type of Injection Fluid *(Check the appropriate block(s))*

- ☐ Salt Water
- ☐ Brackish Water
- ☐ Fresh Water
- ☐ Liquid Hydrocarbon
- ☐ Other

Lease Name | Well Number

Name of Injection Zone

Date Drilling Began | Date Well Completed | Permeability of Injection Zone

Date Drilling Completed | Porosity of Injection Zone

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt./Ft. — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter

INJECTION ZONE STIMULATION		WIRE LINE LOGS LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals

Complete Attachments A — E listed on the reverse.

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)* | | DATE SIGNED

EPA Form 7520-10 (2-84)

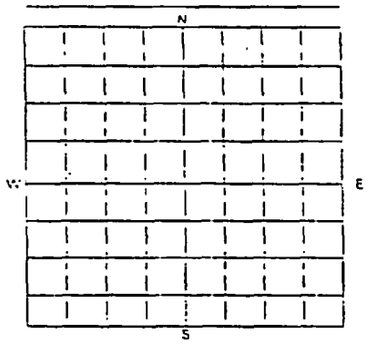
Form Approved. OMB No. 2040-0042. Approval expires 8-31-87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

NAME AND ADDRESS OF EXISTING PERMITTEE	NAME AND ADDRESS OF SURFACE OWNER

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF	¼ OF	¼ SECTION	TOWNSHIP	RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

WELL ACTIVITY
- ☐ Brine Disposal
- ☐ Enhanced Recovery
- ☐ Hydrocarbon Storage

TYPE OF PERMIT
- ☐ Individual
- ☐ Area

Number of Wells ____

Lease Name Well Number

MONTH	YEAR	INJECTION PRESSURE AVERAGE PSIG	INJECTION PRESSURE MAXIMUM PSIG	TOTAL VOLUME INJECTED BBL	TOTAL VOLUME INJECTED MCF	TUBING — CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MINIMUM PSIG	TUBING — CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MAXIMUM PSIG

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

EPA Form 7520-11 (2-84)

Form Approved. OMB No. 2060-0042. Approval expires 8-31-87.

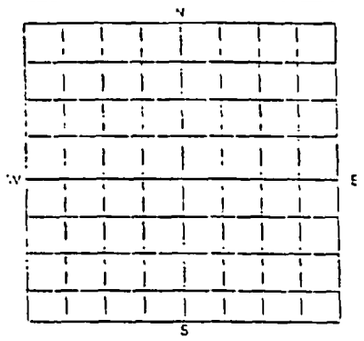
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER

SURFACE LOCATION DESCRIPTION

¼ OF	¼ OF	¼ SECTION	TOWNSHIP	RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☐ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	Total Depth After Rework	☐ Individual ☐ Area Number of Wells ____
Lease Name	Date Rework Commenced	Well Number
	Date Rework Completed	

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

EPA Form 7520-12 (2-84)

APPENDIX C

(Plugging & Abandonment Plan)

Form Approved. OME No. 2040-0042. Approval expires 5-

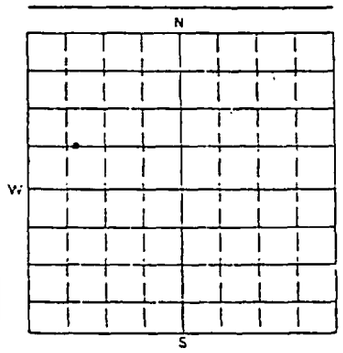
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR
EPU No. 80-D Poplar, Montana	Murphy Oil USA, Inc. 200 Peach St. El Dorado, AR 71730

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1962 ft. from (N/S) N Line of quarter section
and 701 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION	WELL ACTIVITY
☒ Individual Permit ☐ Area Permit ☐ Rule Number of Wells 1	☐ CLASS I ☒ CLASS II ☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage ☐ CLASS III
Lease Name EPU	Well Number 80-D

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB./FT.)	TO BE PUT IN WELL (FT.)	TO BE LEFT IN WELL (FT.)	HOLE SIZE
13 3/8	48#		164.14	17 1/4
9 5/8	36#		966.93	12 1/4
5 1/2	15.5#		5818.5	6 3/4

METHOD OF EMPLACEMENT OF CEMENT PLUGS

☒ The Balance Method
☐ The Dump Bailer Method
☐ The Two-Plug Method
☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5½	5½	9 5/8				
Depth to Bottom of Tubing or Drill Pipe (ft.)	3168'	700'	100'				
Sacks of Cement To Be Used (each plug)	10	10	20				
Slurry Volume To Be Pumped (cu. ft.)	11.5'	11.5'	23'				
Calculated Top of Plug (ft.)	3092'	614'	15'				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)	G	G	G				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3218'	3250'		
3284'	3410'		
3462'	3512'		

Estimated Cost to Plug Wells
$25,000.00

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Alvin W. Simpson, Manager of Operations	Alvin W. Simpson	March 14, 1985

EPA Form 7520-14 (3-84)

ADDENDUM TO THE STATEMENT OF BASIS

The following sections of the statement of Basis have been modified to accommodate public comments:

Part II Section A. 3.

Monitoring Devices — Condition 3

EPA is also requiring the permittee to install a sampling tap for the purpose of collecting injection fluid samples on the injection line. For measuring cumulative volumes of injected fluid, EPA is allowing the submission of calculations for determination of cumulative volume measurements. These calculations are based upon the amount of time the injection pump is operating and the volume of fluid which can be pumped during that period of time. EPA is requiring the permittee to calibrate the pumping rates every month so each month will start with a newly determined pumping rate. Values for cumulative volume shall be taken weekly, averaged and recorded monthly and reported annually to the Denver EPA Office.

Part II. Section C. 7.

Annular Fluid — Condition 7

The applicant stated that the tubing/casing annulus is to be filled with fluid treated with corrosion inhibitors and oxygen scavengers.

Part II. Section D. 1. (b).

Injection Well Monitoring Program — (Condition 1)

Injection pressure, flow rate and cumulative volume measurements are required to be made weekly with a monthly averaging and recording and reported annually. These measurements may be taken at the wellhead or at the pumping station, provided that the measurements taken are comparable. Calculations of flow rate and cumulative volumes are made by comparing time with volume of fluid pumped by the pump. So cumulative volume is calculated by time the pump was operating multiplied by the flow rate of the pump. The pumping rate shall be calibrated monthly.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Address(EPA Regional Office)
US EPA, Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2405

Notice of Inspection

Date	Hour
9-25-87	9:15AM

Firm Name	Firm Address
Murphy Oil	80-D

Inspector Name & Title	Inspector Signature
Marc Herman	Marc Herman

Notice of Inspection is hereby given according to Section 1445(b) if Safe Drinking Water Act (42 Y.S.C. §300 f et seq.).

Reason for Inspection

Routine Inspection of SWD well.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

JAN 10 1986

REC. PROD. JAN 17 1986

REF: 8WM-DW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Al Simpson
Murphy Oil Corp.
200 Peach Street
El Dorado, Arkansas 71730

RE: UIC Draft Permit
EPA # MTS21PE-0026
Well # EPU 80-D

Dear Mr. Simpson

Enclosed is the Draft Underground Injection Control Permit for the EPU 80-D well defined in your application referenced above. This well is located in the East Poplar Field, Roosevelt County, Montana.

The public comment period will run 30 days from date of publication in Billings Gazette and the Wolf Point Herald. This is also Murphy Oil's opportunity to review and comment on the draft permit action; failure to do so, may result in unsatisfactory operating conditions for this facility.

You may call Edna Walton at (303) 293-1421 for information concerning the publication date. If you wish to make any comments, please make them in writing to the attention of Angus Campbell of this office, or phone (303) 293-1420.

Sincerely,

Max H. Dodson, Director
Water Management Division

Enclosures

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

PUBLIC NOTICE

INTENT TO ISSUE AN UNDERGROUND INJECTION CONTROL
CLASS II PERMIT
TO
MURPHY OIL CORPORATION

PURPOSE OF PUBLIC NOTICE

The purpose of this notice is to solicit public comment on the proposal by the Region VIII Office of the U. S. Environmental Protection Agency (EPA) to issue a permit to inject fluids underground via a Class II injection well; identified by well number EPU 80-D.

BACKGROUND

EPA Region VIII is currently reviewing an application for an Underground Injection Control Permit from Murphy Oil Corporation, 200 Peach Street, El Dorado, Arkansas 71730, regarding current water disposal practices. The injection fluid now being disposed of is a combination of brine produced in conjunction with the extraction of oil from the Mississippian age Madison Limestone and Heath Formation. Murphy Oil has been using the well known as EPU 80-D located in the SW/4, NW/4, Section 3, Township 28N, Range 51E of the East Poplar Field in Roosevelt County, Montana, since 1963, for the purpose of disposing fluids into the Dakota Sandstone. This well is currently constructed and operated within EPA guidelines for injection wells.

The Dakota Sandstone was exempted for a 1/4 mile radius from the wellbore and vertically between 3218 - 3512 feet from the Kelly Bushing since June 1984, when this well became authorized to inject by rule. However, due to the volumes of fluid being injected, the aquifer exemption is being expanded to 1/2 mile.

EPA has made a preliminary determination to approve the permit application and that by doing so, all underground sources of drinking water will be protected. Therefore, EPA is hereby serving notice of intent to issue a permit for the current underground injection activities. This action is being taken as provided by Part C of the Safe Drinking Water Act and attendant regulations.

PUBLIC COMMENTS

All data, except confidential business information, submitted by the applicant, as well as the draft permit prepared by EPA, are contained in the administrative record for Murphy Oil, well number, East Poplar Unit (EPU) 80-D. This information is available for public inspection at these locations from 9:00 a.m. to 5:00 p.m., or by contacting one of the following offices:

Environmental Protection Agency
Region VIII (8WM-DW)
Ground Water Section
One Denver Place, Suite 1300
999 18th Street
Denver, Colorado 80202-2413
Telephone (303) 293-1420
ATTN: Angus Campbell

Environmental Protection Agency
Montana Office
Federal Office Building
Drawer 10096
301 South Park
Helena, Montana 59626
Telephone (406) 449-5414

Public comments are encouraged and will be accepted, in writing, at the Denver Office for a period of thirty (30) days after publication of this notice. A request for a public hearing should be made in writing and should state the nature of the issues proposed to be raised at the hearing. A PUBLIC HEARING WILL BE HELD ONLY IF SIGNIFICANT INTEREST IS SHOWN.

JAN 21 1986
Date of Publication

Max H. Dodson
Max H. Dodson, Director
Water Management Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

DRAFT

UNDERGROUND INJECTION CONTROL AQUIFER EXEMPTION

Related to UIC Permit Number: MTS21PE-0026

In compliance with provisions of the Safe Drinking Water Act, as amended, (42 U.S.C. 300f-300j-9, commonly known as SWDA) and attendant regulations incorporated by the U. S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations,

The Dakota Sandstone located:

1.) vertically from 3,218 to 3,512 feet below ground level, and

2.) Laterally within one-half mile radius from the injection well (commonly called EPU 80-D) located NE/4, SW/4 Section 3, Township 28 North, Range 51 East of Roosevelt County, Montana.

is exempted as an Underground Source of Drinking Water.

This aquifer exemption is expanded in conjuction with the Underground Injection Control Permit issued to Murphy Oil USA. Inc. of El Dorado, Arkansas, for the injection of water for disposal purposes.

This aquifer exemption has no expiration date.

Signed this _____ day of _____, 1986.

DRAFT

Max H. Dodson, Director
Water Management Division

Form Approved. OMB No. 2040-0042. Expires 9-30-8

Form 4 UIC

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL
PERMIT APPLICATION
(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)

I. EPA ID NUMBER: U well fill — T/A

READ ATTACHED INSTRUCTIONS BEFORE STARTING
FOR OFFICIAL USE ONLY

Application approved mo day year	Date Received mo day year	Permit/Well Number	Comments
		EPU 80-D	

II. FACILITY NAME AND ADDRESS

Facility Name: East Poplar Unit
Street Address: P. O. Box 547
City: Poplar — State: MT — ZIP Code: 59255

III. OWNER/OPERATOR AND ADDRESS

Owner/Operator Name: Murphy Oil USA, Inc.
Street Address: 200 Peach Street
City: El Dorado — State: AR — ZIP Code: 71730

IV. OWNERSHIP STATUS *(Mark 'x')*

☐ A. Federal ☐ B. State ☒ C. Private
☐ D. Public ☐ E. Other *(Explain)*

V. SIC CODES

1311

VI. WELL STATUS *(Mark 'x')*

☒ A. Operating — Date Started: mo 1, day 3, year 64
☒ B. Modification/Conversion ☐ C. Proposed
Permitting Existing Well Approved by Rule

VII. TYPE OF PERMIT REQUESTED *(Mark 'x' and specify if required)*

☒ A. Individual ☐ B. Area

Number of Existing wells	Number of Proposed wells	Name(s) of field(s) or project(s)
1		East Poplar Unit

VIII. CLASS AND TYPE OF WELL *(see reverse)*

A. Class(es) *(enter code(s))*	B. Type(s) *(enter code(s))*	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
11 D			

IX. LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT — **X. INDIAN LANDS** *(Mark 'x')*

C	A. Latitude Deg	Min	Sec	B. Longitude Deg	Min	Sec	Township and Range Twsp	Range	Sec	¼ Sec	Feet from	Line	Feet from	Line	X. Yes	X. No
1							28N	51E	3	NW	1982	N	761	W	☒	☐

XI. ATTACHMENTS

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application: A, E, G, H, M; O, R, and U.

XII. CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*	Deal Form	B. Phone No. *(Area Code and No.)*
GLENN M. FEDDERSON Vice President		501/862-6411
C. Signature		D. Date Signed: 12/4/84

Form Approved. OMB No. 2000-0042
Approval expires 9-30-86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

COMPLETION FORM FOR INJECTION WELLS

ADMINISTRATIVE INFORMATION

1. Permittee

MURPHY OIL USA, INC.

Address *(Permanent Mailing Address) (Street, City, State, and ZIP Code)*

P. O. Box 547, Poplar, Montana 59255 (District Office)
200 Peach Street, El Dorado, Arkansas 71730 (Home Office)

2. Operator

MURPHY OIL USA, INC.

Address *(Street, City, State, and ZIP Code)*

SAME AS ABOVE

3. Facility Name

EAST POPLAR UNIT 80D

Telephone Number

District Office 406-768-3611
Home Office 501-862-6411

Address *(Street, City, State, and ZIP Code)*

Murphy Oil USA, Inc. (District Office)
P. O. Box 547
Poplar, Montana 59255

4. Surface Location Description of Injection Well(s)

State	County
Montana	Roosevelt

¼ of	¼ of	¼ section
	SW	NW 3

Township	Range
28N	51E

Feet from (N/S)	Line of quarter section and
1982	N

Feet from (E/W)	Line of quarter section
761'	W

Submit with this Completion Form the attachments listed in *Attachments for Completion Form.*

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
GLENN M. FEDDERSON Vice President		12/4/84

EPA Form 7520-9 (2-84)

CONTINUED ON REVERSE

WASHINGTON, DC 20460

Form Approved
OMB No. 2040-0042
Approval expires 3-30-86

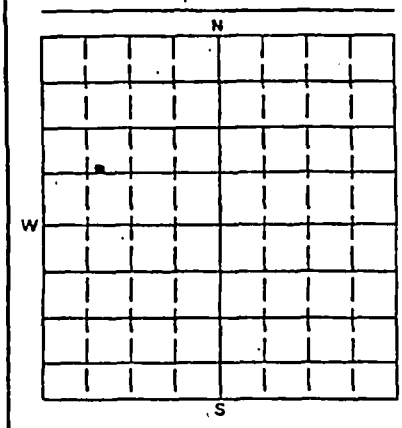
EPA COMPLETION REPORT FOR BRINE DISPOSAL HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

NAME AND ADDRESS OF EXISTING PERMITTEE
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730

EPU 80-D

NAME AND ADDRESS OF SURFACE OWNER
Willbar P. Lockman
Box 175
Poplar, Montana 59255

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION
5 NE ¼ OF NW ¼ OF ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY
- [x] Brine Disposal
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [ ] Area

Number of Wells ____

Estimated Fracture Pressure of Injection Zone 2490 psig

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet
1700	4500	3218	3512

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	
400	650	Warren Corne Water Well 150'

Type of Injection Fluid *(Check the appropriate block(s))*
- [x] Salt Water
- [ ] Brackish Water
- [ ] Fresh Water
- [ ] Liquid Hydrocarbon
- [ ] Other

Lease Name: EPU
Well Number: 80-D
Name of Injection Zone: Dakota Sand

Date Drilling Began	Date Well Completed	Permeability of Injection Zone
7-2-56	7-29-56	DATA NOT AVAILABLE

Date Drilling Completed	Porosity of Injection Zone
7-26-56	DATA NOT AVAILABLE

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter
13 3/8	48# H-40 New	161.39	175	G-? 1-1 pos	mix 195	17½
9 5/8	35# J-55 New	980.68	400	G-?	990	12¼
5 1/2	15.5# J-55 New	5831	300	G-?1-1 pos	mix 5932	8 3/4
2 7/8	6.5#J-55 New	3189.93	510	G-?		

INJECTION ZONE STIMULATION		WIRE LINE LOGS. LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
3218-3512	1304 Bbls Water	Elect Survey 2"	979-5832
		Elect Survey 5"	2000-5832
		Microlog 5"	2000-5831
		Gamma Ray Beutron	2850-5779

Complete Attachments A — E listed on the reverse.

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*
GLENN M. FEDDERSON
Vice President

Dial Form

DATE SIGNED
12/4/84

EPA Form 7520-10 (2-84)

EPA

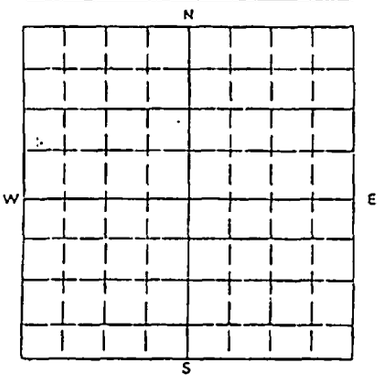
PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY
Murphy Oil USA, Inc.
Poplar, MT 59255
EPU NO. 80-D

NAME AND ADDRESS OF OWNER/OPERATOR
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730

STATE: MT | COUNTY: Roosevelt | PERMIT NUMBER:

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF ¼ SECTION 3 TOWNSHIP 28N RANG

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLIN

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION
- [X] Individual Permit
- [ ] Area Permit
- [ ] Rule

Number of Wells 1

WELL ACTIVITY
- [ ] CLASS I
- [X] CLASS II
  - [X] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [ ] CLASS III

Lease Name EPU
Well Number 80-D

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	48#		155.39	17½
9 5/8	36#		974.68	12¼
5½	15.5#		5825	8 3/4

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- [ ] The Balance Method
- [X] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5½	5½	9 5/8	5½		
Depth to Bottom of Tubing or Drill Pipe (ft.)	3168	700	100	100		
Sacks of Cement To Be Used (each plug)	10	10	20	10		
Slurry Volume To Be Pumped (cu. ft.)	11.5	11.5	23	23		
Calculated Top of Plug (ft.)	3082	614	15	14		
Measured Top of Plug (if tagged ft.)						
Slurry Wt. (Lb./Gal.)						
Type Cement or Other Material (Class III)						

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3218	3250		
3284	3410		
3462	3512		

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED

EPU 80-D

A. Area of Review
Fixed Radius of 1/4 mile - Field Plat attached. No wells within the area of review.

E. Name and Depth of USDWs (Class II)

Depth	Name	Local Name
150'	Tertiary Sand	Unknown

G. Geological Data

ZONE	NAME	DESCRIPTION	DEPTH	THICKNESS	FRAC PRESSURE
Upper Confining	Skull Creek	Gray Shale w/ Traces of Red Silt	2980'±	130'±	Unknown
Injection	* Dakota	White, fine grain, Pouous Sandstone	3110'±	350'±	1 psi/foot
Lower Confining	Fuson	Dark Gray Shale w/trace of sand	3600'±	300'±	Unknown

*The Dakota Sand is overlain by the Dakota Silt.

H. Operating Data

(1) Average Injection Volume - 1700 Bbls/Day Injection Rate 122 Bbls/Hour
Maximum Injection Volume - 4500 Bbls/Day
(2) Average Injection Pressure - 400 psi
Maximum Injection Pressure - 650 psi
(3) Annulus Fluid - Corrosion Inhibited Fluid
(5) Source of Injection Fluid - Mississippian Formation fluid produced from the East Poplar Field.
(6) SWD Station No. 3 operates with one pump and a backup pump.
See Attached Analysis

M. Schematics Attached

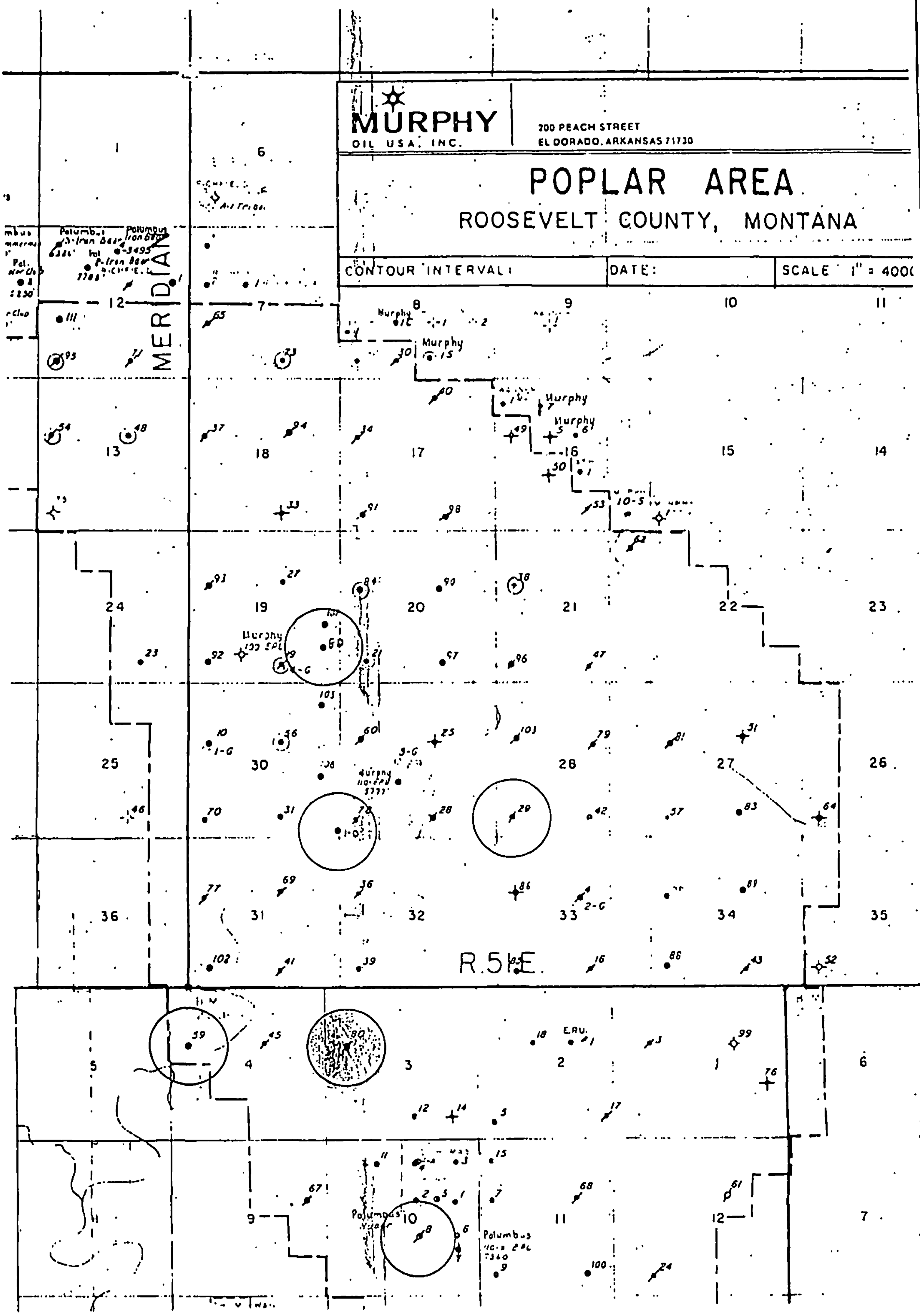
Q. Plugging and Abandonment Plan -
EPA Form 7520-14 is attached

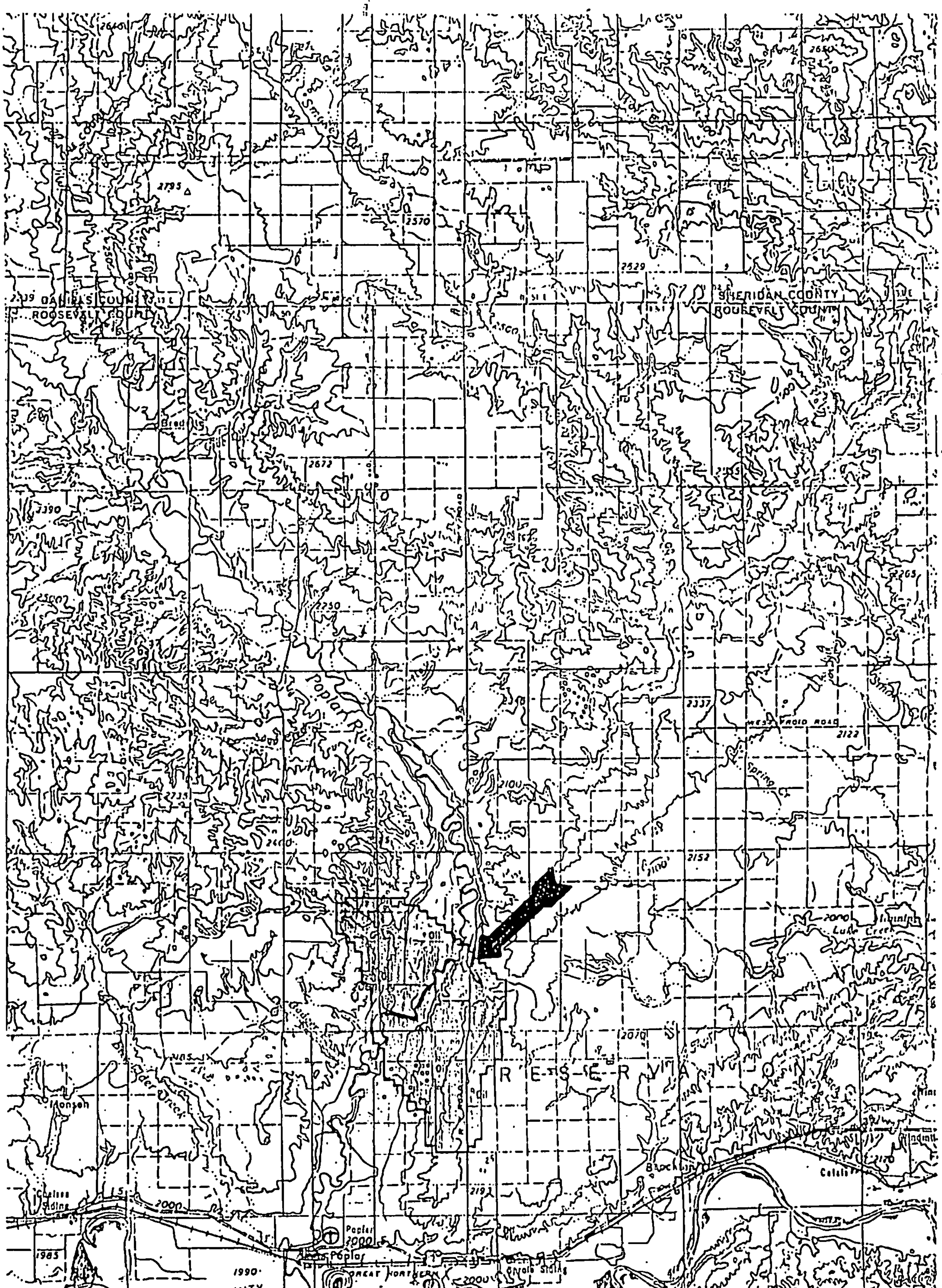
R. Necessary Resources
See attached financial statement

U. Description of Business - EPU Well No. 80-D is used to dispose of part of the produced salt water from the East Poplar Unit wells. The salt water is separated from the produced fluid and comes to the disposal facility at SWD Station No. 1 through closed flowlines. The salt water is held in the salt water storage tanks until the salt water disposal pumps are engaged through automatic level switches. The salt water disposal pumps dispose of the salt water into the tubing of the wellbore and then into the formation.

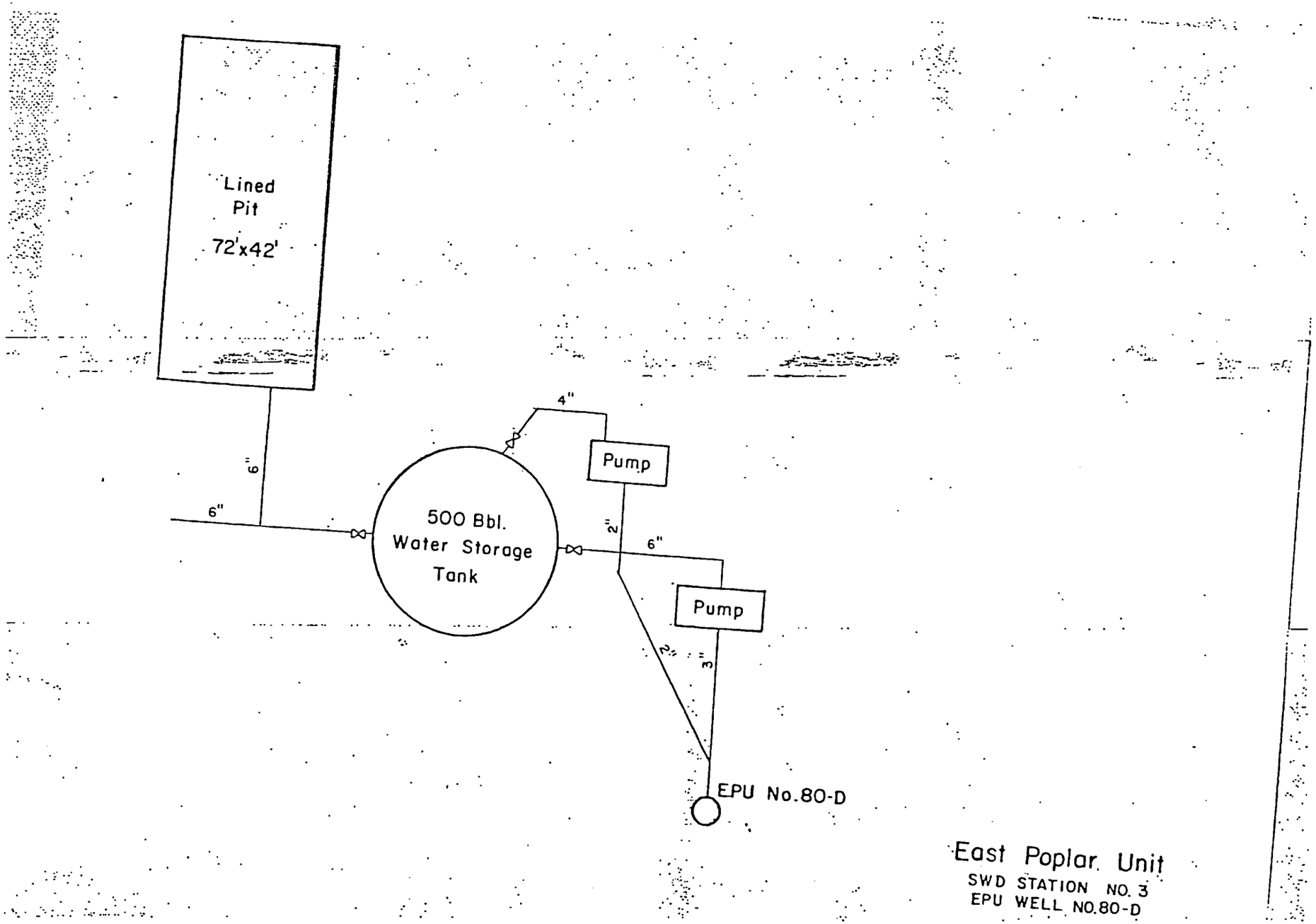
The produced fluids are mixed in the flowlines and the resulting final TDS is approximate 130,000 TDS.

The SWD Station No. 3 operates an average of 14 hours per day.

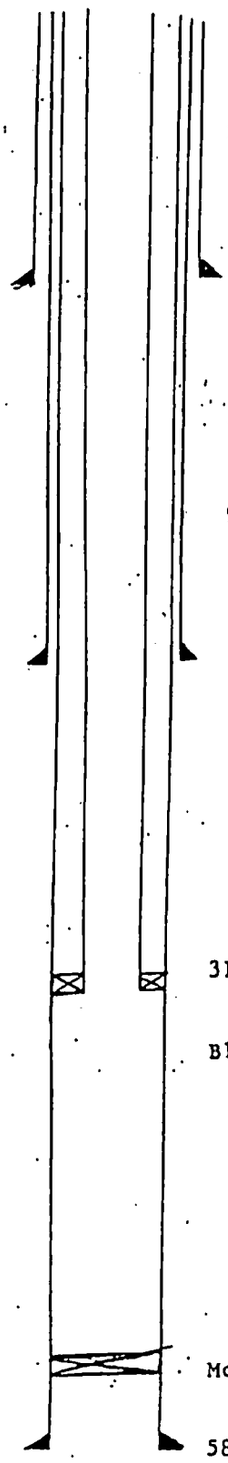

MURPHY
OIL USA, INC.
200 PEACH STREET
EL DORADO, ARKANSAS 71730
POPLAR AREA
ROOSEVELT COUNTY, MONTANA
CONTOUR INTERVAL:
DATE:
SCALE 1" = 4000
MERIDIAN
R.51E.
Murphy
Palumbus
E.R.U.



SHERIDAN COUNTY
ROOSEVELT COUNTY
2570
2529
2672
2750
Poplar R.
2337
2122
Spring Cr.
2100
2152
2070
Poplar
2000
1990
GREAT NORTHERN
Brockton
ROOSEVELT COUNTY


Lined
Pit
72'x42'
6"
6"
500 Bbl.
Water Storage
Tank
4"
Pump
2"
6"
Pump
2"
3"
EPU No.80-D
East Poplar Unit
SWD STATION NO. 3
EPU WELL NO.80-D

EPU 80-D Subsurface Well Design



150.14' of 13 3/8", 48#, H-40, 8rd. cemented to surface

970.93' of 9 5/8", 35#, J-55, 8rd. cemented to surface

3189.93' of 2 7/8", 6.5#, J-55 internally coated tubing and coated packer

Block squeeze with 610 sacks cement at 3595'.

Model K cement retainer set at 5300', 1 sack cement on top

5822.5' of 5 1/2", 15.5#, J-55, 8rd. cemented 300 sacks cement

98 joints 2 7/8", 6.5# internally coated tubing with plastic coated packer set at 3203.36

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDO[illegible]ENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR
EPU NO. 80-D POPLAR, MONTANA	MURPHY OIL USA, INC. 200 Peach St. El Dorado, Arkansas 71730

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES

N / W / E / S

STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF ¼ SECTION 3 TOWNSHIP 28 RANGE 51

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 261 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION
- ☐ Individual Permit
- ☐ Area Permit
- ☐ Rule

Number of Wells ____

Lease Name

WELL ACTIVITY
- ☐ CLASS I
- ☒ CLASS II
  - ☒ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	48#		146.14	17½
9 5/8	36#		966.93	12¼
5 1/2	15.5#		5818.5	8 3/4

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☐ The Balance Method
- ☒ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5½	5½					
Depth to Bottom of Tubing or Drill Pipe (ft.)	3168						
Sacks of Cement To Be Used (each plug)	2	10					
Slurry Volume To Be Pumped (cu. ft.)	2	10					
Calculated Top of Plug (ft.) 3153	3149	10					
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)							

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3218	3250		
3284	3410		
3462	3512		

Estimated Cost to Plug Wells
$10,000

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED

EPA Form 7520-14 (3-84)

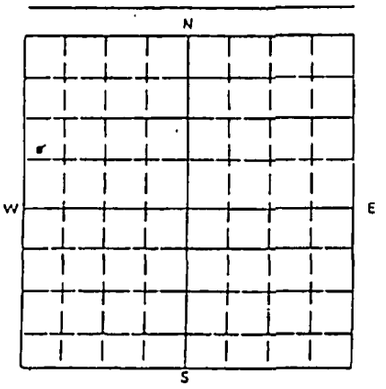
PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY
Murphy Oil USA, Inc.
Poplar, MT 59255
EPU NO. 80-D

NAME AND ADDRESS OF OWNER/OPERATOR
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730

STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION
- ☒ Individual Permit
- ☐ Area Permit
- ☐ Rule

Number of Wells 1

Lease Name EPU

WELL ACTIVITY
- ☐ CLASS I
- ☒ CLASS II
  - ☒ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Well Number 80-D

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	48#		155.39	17½
9 5/8	36#		974.68	12¼
5½	15.5#		5825	8 3/4

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☐ The Balance Method
- ☒ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5½	5½	9 5/8	5½			
Depth to Bottom of Tubing or Drill Pipe (ft.)	3168	700	100	100			
Sacks of Cement To Be Used (each plug)	10	10	20	10			
Slurry Volume To Be Pumped (cu. ft.)	11.5	11.5	23	23			
Calculated Top of Plug (ft.)	3082	614	15	14			
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)							

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3218	3250		
3284	3410		
3462	3512		

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED

EPA Form 7520-14 (3-84)

EPA PLUGGING AND ABANDONMENT PLAN

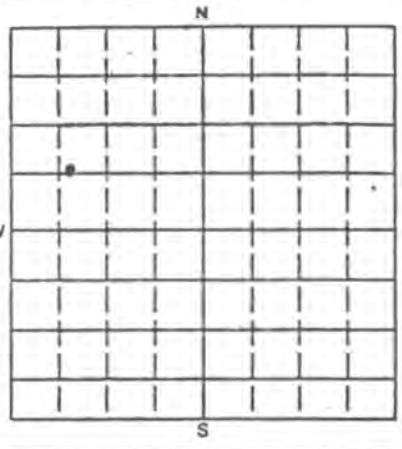
NAME AND ADDRESS OF FACILITY

EPU NO. 80-D
POPLAR, MONTANA

NAME AND ADDRESS OF OWNER/OPERATOR

MURPHY OIL USA, INC.
200 Peach St.
El Dorado, Arkansas 71730

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE: MT
COUNTY: Roosevelt

SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF ¼ SECTION 3 TOWNSHIP 28 N RANGE 51 E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION
- ☒ Individual Permit
- ☐ Area Permit
- ☐ Rule

Number of Wells 1

Lease Name EPU

WELL ACTIVITY
- ☐ CLASS I
- ☒ CLASS II
  - ☒ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Well Number 80-D

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	48#		146.14	17½
9 5/8	36#		966.93	12¼
5 1/2	15.5#		5818.5	8 3/4

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☐ The Balance Method
- ☒ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	5½ *	5½					
Depth to Bottom of Tubing or Drill Pipe (ft.)	3168						
Sacks of Cement To Be Used (each plug)	2	10					
Slurry Volume To Be Pumped (cu. ft.)	2	10					
Calculated Top of Plug (ft.)	3153	10					
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)							
Type Cement or Other Material (Class III)							

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
3218	3250		
3284	3410		
3462	3512		

Estimated Cost to Plug Wells $ 10,000

*Cast Iron Bridge Plug will be set at 3168' with 2 sacks of cement on top. Top plug will be within 10' of surface. Casing will be cut off 4' below ground and a plate welded on top.

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)
GLENN M. FEDDERSON
Vice President

Detail / Form

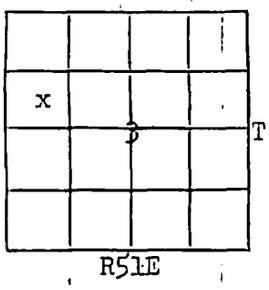
SIGNATURE

DATE SIGNED
12/4/84

EPA Form 7520-14 (3-84)

CORRECTED COPY

LOCATE WELL CORRECTLY



Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
NOV 15 1956
OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

LOG OF WELL

Company MURPHY CORPORATION Lease 1-37-Ind-12914 Well No. 80

Address Poplar, Montana Field (or Area) East Poplar

The well is located 1982 ft. from (N) (S) line and 761 ft. from (E) (W) line of Sec. 3

Sec. 3 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2069' K.B.
(D.F., R.B. or G.L.)

Commenced drilling July 2, 1956; Completed July 29, 1956

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as Oil Well
(oil well, gas well, dry hole)

Signed M. H. Gomez

Title Field Production Supt.

Date November 1, 1956

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5456 to 5474 "A-1" O

From ____ to ____ From ____ to ____

From ____ to ____ From ____ to ____

From ____ to ____ From ____ to ____

From ____ to ____ From ____ to ____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
13 3/8"	48#	H-40	8rd	161.39			175	
9 5/8"	36#	J-55	8rd	980.68			400	
5 1/2"	15.50#	J-55	8rd	5831.00			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2 3/8"	4.70#	J-55	8rd	5483.85	Open Ended

COMPLETION RECORD

Rotary tools were used from 0 to 5832'

Cable tools were used from ____ to ____

Total depth 5832 ft.; Plugged back to 5779 T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5456	5474	4 - 1/2" jets per ft.	5456	5474	500 gallons	2500#

(If P&A show plugs above)

RECEIVED
NOV 19 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

INITIAL PRODUCTION

Well is producing from Madison (pool) formation.

I. P. 125 barrels of oil per 24 hours Pumping
(pumping or flowing)

neg. Mcf of gas per ____ hours.

48 barrels of water per 24 hours, or 28 % W.C.

(OVER)

10M--1-56

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)

Pressures (if measured): Tubing _____ psi flowing; _____ psi shut

Casing _____ psi flowing; _____ psi shut

Gravity _____ ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			SEE ATTACHED PAGE 4					

LOGS RUN

Type	Intervals	
	From	To
SEE ATTACHED PAGE 3		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation

GEOLOGICAL PROSPECTUS

Division Billings Lease No. 3649

Operator Murphy Corporation Well Name East Poplar Unit Well No. 80

Location: Section SW NW 3 Township 28 North Range 51 East

Pool Name: East Poplar County Roosevelt State Montana

Type of Well: Oil X Gas ____ Exploratory ____ Development X

Objective Formation Madison "C" Zone Projected Depth 5800'

Well Elevation 2065' K.B. (est)

Judith River	725 (+1340)	Piper Shale	4260 (-2195)
Eagle	1129 (+ 936)	Piper Limestone	4345 (-2280)
Niobrara	1983 (+ 82)	Spearfish	4593 (-2528)
Greenhorn	2345 (- 280)	Amsden	4733 (-2668)
Muddy	2912 (- 847)	Heath	4825 (-2760)
Dakota	3118 (-1053)	Otter	5017 (-2952)
Morrison	3547 (-1482)	Kibbey Sandstone	5113 (-3048)
Swift	3563 (-1498)	Kibbey Limestone	5275 (-3210)
Rierdon	3912 (-1847)	Madison	5370 (-3305)

Anticipated Pay Horizons, Net Pay and Expected Depths:

Madison		
"A" Zone	10'	5478 (-3413)
"B-1" Zone	9'	5620 (-3555)
"B-2" Zone	16'	5638 (-3573)
"C" Zone	15'	5773 (-3708)

Recommended Coring and Formation Testing Program:

Circulate Heath & Kibbey sandstones and core on show.
Test if warranted.

Recommended Sampling and Logging Program:

20' samples from 2000' to 4000'
10' samples from 4000' to total depth.

2" E.S. base surface pipe to total depth
5" E.S. 2000' to total depth.
5" M.L. 2000' to total depth
25" M.L. 5350' to total depth.

Remarks (Including pertinent data relative to location accessibility, unusual drilling problems due to surface and subsurface conditions, etc.)

Emerson K. Beckly
Division Geologist

5-31-56
Date

FW/wf

WELL DRILLING PLAN

Field or Area East Poplar Unit Division Billings

County or Parish Roosevelt Total Anticipated Depth 5800'

Lease East Poplar Unit Well Name East Poplar Unit Well No. 80

Well Location SW NW Section 3-T28N-R51E

Lowest fresh water sand (for surface casing program): 90'

Casing and tubing program:

	From	To	Size	Weight	Grade	Bit Size
Conductor	0	150'	13-3/8"	48#	H	17-1/4"
Surface	0	1000'	9-5/8"	32.75#	J	12-1/4"
Intermediate						
Production	0	5800'	5-1/2"	15.50#	J	8-3/4"
Tubing	0	5800'	2-7/8"	4.60#	J	EUE

Potential Drilling Hazards Gas and water flow may be expected from the Judith River Sand.

Mud Program Raise mud weight to 11½ to 12 PPG while drilling the Judith River sand. Usual procedure under surface casing.

Coring Method and Size Core Bits to be used None

Intervals Cores to be Analyzed None

Method of Drill Stem Testing None

Anticipated Completion Zone "B-1" and "B-2" Zones

Method of opening pay, perforation or open hole, and approximate interval: Commingled completion

Expected Formation Treatments 1000 gallons etching acid in each zone.

Expected logs for Development, Evaluation, or Completion Purposes Radio-active logs from T.D. to 3000' inside production string plus the logs indicated on the Geological Prospectus.

Remarks:

Date 5/31/56 Production Superintendent Harold Wilson

80-D

Area of Review
Fixed Radius of 1/4 mile - Field Plat attached. No wells within the area of review.

E. Name and Depth of USDWs (Class II)

Depth	Name	Local Name
150'	Tertiary Sand	Unknown

Judith River

G. Geological Data

ZONE	NAME	DESCRIPTION	DEPTH	THICKNESS	FRAC PRESSURE
Upper Confining	Skull Creek	Gray Shale w/ Traces of Red Silt	2980'±	130'±	Unknown
Injection	* Dakota	White, fine grain, Pouous Sandstone	3110'±	350'±	1 psi/foot
Lower Confining	Fuson	Dark Gray Shale w/trace of sand	3600'±	300'±	Unknown

*The Dakota Sand is overlain by the Dakota Silt.

700 high

H. Operating Data

(1) Average Injection Volume - 1700 Bbls/Day Injection Rate 122 Bbls/Hour
Maximum Injection Volume - 4500 Bbls/Day
(2) Average Injection Pressure - 400 psi ok
Maximum Injection Pressure - 650 psi ok my max = 730 psi -
(3) Annulus Fluid - Corrosion Inhibited Fluid
(5) Source of Injection Fluid - Mississippian Formation fluid produced from the East Poplar Field.
(6) SWD Station No. 3 operates with one pump and a backup pump.
See Attached Analysis

M. Schematics Attached

Q. Plugging and Abandonment Plan -
EPA Form 7520-14 is attached

R. Necessary Resources
See attached financial statement

U. Description of Business - EPU Well No. 80-D is used to dispose of part of the produced salt water from the East Poplar Unit wells. The salt water is separated from the produced fluid and comes to the disposal facility at SWD Station No. 1 through closed flowlines. The salt water is held in the salt water storage tanks until the salt water disposal pumps are engaged through automatic level switches. The salt water disposal pumps dispose of the salt water into the tubing of the wellbore and then into the formation.

The produced fluids are mixed in the flowlines and the resulting final TDS is approximately 130,000 TDS.

The SWD Station No. 3 operates an average of 14 hours per day.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

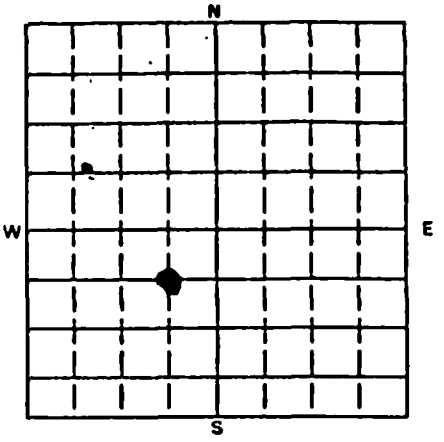
EPA COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

Form Approved
OMB No. 2040-0042
Approval expires 9-30-86

NAME AND ADDRESS OF EXISTING PERMITTEE
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730
EPU 80-D

NAME AND ADDRESS OF SURFACE OWNER
Willbar P. Lockman
Box 175
Poplar, Montana 59255

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION
NE ¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY
- [x] Brine Disposal
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [ ] Area
- Number of Wells ____

Estimated Fracture Pressure of Injection Zone: 2490 psig

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet
1700	4500	3218	3512

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	
400	650	Warren Corne Water Well 150'

Type of Injection Fluid *(Check the appropriate block(s))*
- [x] Salt Water
- [ ] Brackish Water
- [ ] Fresh Water
- [ ] Liquid Hydrocarbon
- [ ] Other

Lease Name: EPU
Well Number: 80-D
Name of Injection Zone: Dakota Sand

Date Drilling Began	Date Well Completed
7-2-56	7-29-56

Permeability of Injection Zone: DATA NOT AVAILABLE
Date Drilling Completed: 7-26-56
Porosity of Injection Zone: DATA NOT AVAILABLE

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter
13 3/8	48# H-40 New	150.14' ok	175	G-? 1-1 pos	mix 195	17½
9 5/8	35# J-55 New	970.93' ok	400	G-?	990	12¼
5 1/2	15.5#J-55 New	5822.5' ok	300	G-?1-1 pos	mix 5932	8 3/4
2 7/8	6.5#J-55 New	3189.93' ok	610	G-?		

INJECTION ZONE STIMULATION		WIRE LINE LOGS, LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
3218-3512	1304 Bbls Water	Elect Survey 2"	979-5832
		Elect Survey 5"	2000-5832
		Microlog 5"	2000-5831
		Gamma Ray Neutron	2850-5779

Complete Attachments A — E listed on the reverse.

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*
GLENN M. FEDDERSON
Vice President

Dist
Form

DATE SIGNED
12/4/84

EPA Form 7620-10 (2-84)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

COMPLETION REPORT FOR BRINE DISPOSAL, HYDROCARBON STORAGE, OR ENHANCED RECOVERY WELL

Form Approved
OMB No. 2040-0042
Approval expires 9-30-86

NAME AND ADDRESS OF EXISTING PERMITTEE

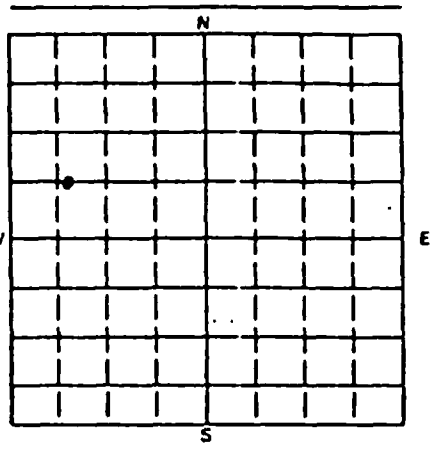
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730

EPU 80-D

NAME AND ADDRESS OF SURFACE OWNER

Willbar P. Lockman
Box 175
Poplar, Montana 59255

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	

SURFACE LOCATION DESCRIPTION

NE ¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY

- ☒ Brine Disposal
- ☐ Enhanced Recovery
- ☐ Hydrocarbon Storage

TYPE OF PERMIT

- ☐ Individual
- ☐ Area

Number of Wells ____

Estimated Fracture Pressure of Injection Zone 2490 psig

Anticipated Daily Injection Volume (Bbls)		Injection Interval	
Average	Maximum	Feet	to Feet
1700	4500	3218	3512

Anticipated Daily Injection Pressure (PSI)		Depth to Bottom of Lowermost Freshwater Formation (Feet)
Average	Maximum	
400	650	Warren Corne Water Well 150'

Type of Injection Fluid *(Check the appropriate block(s))*

- ☒ Salt Water
- ☐ Brackish Water
- ☐ Fresh Water
- ☐ Liquid Hydrocarbon
- ☐ Other

Lease Name	Well Number
EPU	80-D

Name of Injection Zone: Dakota Sand

Date Drilling Began	Date Well Completed
7/2/56	7/29/56

Permeability of Injection Zone: Data Not Available

Date Drilling Completed: 7/26/56

Porosity of Injection Zone: Data Not Available

CASING AND TUBING			CEMENT		HOLE	
OD Size	Wt/Ft — Grade — New or Used	Depth	Sacks	Class	Depth	Bit Diameter
13 3/8	48# H-40 New	150.14'	175	G-? 1-1 pos mix	195	17½
9 5/8	35# J-55 New	970.93'	400	G-?	990	12¼
5 1/2	15.5# J-55 New	5822.5'	300	G-? 1-1 pos mix	5932	8 3/4
2 7/8	6.5# J-55 New	3189.93'	610	G-?		

INJECTION ZONE STIMULATION		WIRE LINE LOGS, LIST EACH TYPE	
Interval Treated	Materials and Amount Used	Log Types	Logged Intervals
3218-3512	1304 Bbls. Water	Elect Survey 2"	979-5832
		Elect Survey 5"	2000-5832
		Microlog 5"	2000-5831
		Gamma Ray Neutron	2850-5779

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NAME AND OFFICIAL TITLE *(Please type or print)*		DATE SIGNED
Alvin W. Simpson Manager of Operations	Alvin W. Simpson	March 14, 1985

EPA Form 7520-10 (2-84)

Cement Calculation

5½" casing in 8¾" hole

300 sx = 1.15 cu/sx = 345 cu ft.

Vol & Hight between csg & hole
3.9589 Ln ft/cu ft.

345 ft^3 x 3.9589 ft/ft^3 = 1365.8 ft of cement

5822.5' - 1365.8
TOC ~~4456.68~~

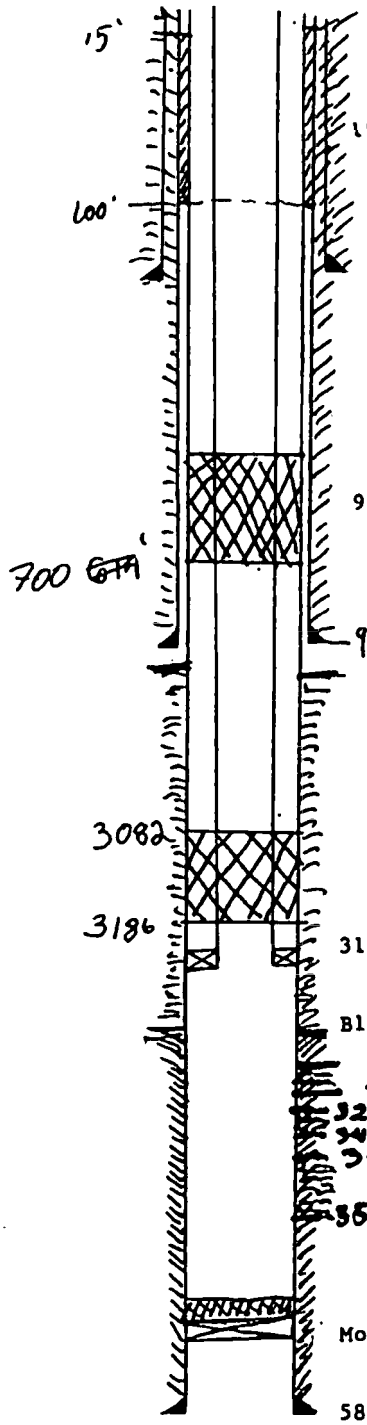
Block Squeeze cement at 3595 610 sx x 1.15 = 701.5 ft^3

701.5 ft^3 x 3.9589 ft/ft^3 = 2777.16 ft
~~1679.5~~ ~~4422~~ 4456.6 - 2277.16 = 1679 ft

Block squeeze at 3595 ft. assume no displacement downward because of mud and mud cake
3595 - 2777.16 = 817.84 feet = TOC

TOC is inbetween 817.84 and 1679 ft

≈ 1000'



150.14' of 13 3/8", 48#, H-40, 8rd. cemented to surface

970.93' of 9 5/8", 35#, J-55, 8rd. cemented to surface

calculated - cement to surface - Estimated to 1,000' BKB

3189.93' of 2 7/8", 6.5#, J-55 internally coated tubing and coated packer

Block squeeze with 610 sacks cement at 3595'.

perforations

Model K cement retainer set at 5300', 1 sack cement on top

5822.5' of 5 1/2", 15.5#, J-55, 8rd. cemented 300 sacks cement

98 joints 2 7/8", 6.5# internally coated tubing with plastic coated packer set at 3203.36

3342.1

Permit Application & Attachments

COMPLETION DATA

CASING:

7-2-56: 195' Ran 4 joints (150.14') of 13 3/8", 48#, H-40, 8rd thd., ST&C, R-2 and 3, Class "A" American casing. Landed 11.25' below RKB at 161.39'. Ran Howco guide shoe on bottom. Cemented with 175 sacks of 1.1 Pozmix with 3% $CaCl_2$. Ran 10 barrels of water ahead, left 10 sacks of cement on top of plug. Bumped plug with 600# at 2:45 A.M., 7-3-56. Bled pressure to 300#, circulated approximately 100 sacks of clean cement to surface.

7-5-56: 990' Ran 30 joints (970.93') of 9 5/8", 36#, J-55, 8rd thd., ST&C, R-2, Class "A" American casing. Landed 9.75' below RKB at 980.68'. Ran Howco float shoe on bottom and 1 Howco centralizer at 965', circulated to clean hole 30 minutes. Cemented with 400 sacks of regular cement with 2% $CaCl_2$. Ran 10 barrels of water ahead of cement. Left 10 sacks of cement on top of plug. Circulated approximately 100 sacks of clean cement to surface. Bumped plug at 8:17 A.M. with 1050# psi, released pressure, float held ok. Packed off 9 5/8" to 13 3/8" with Norris head. Waited on cement 16 hours. Tested casing with 1000# for 30 minutes, held ok.

7-26-56: TD 5932' Ran 187 joints (5822.50') of 5 1/2", J-55, 15.50#, 8rd thd., R-2, ST&C, Class "A" American casing. Landed 8.50' below RKB and set 1' off bottom at 5831'. Ran Howco differential fillup shoe at 5831', and Howco baffle collar at 5797'. Ran 6 Weatherford centralizers at 5818', 5568', 5640', 5515', 5450', and 5204'. Ran 73 Weatherford scratchers from 5156-5831' spaced as follows: 15' 5156-5281', none from 5281-5373', 15' 5373-5434', 5' 5434-5509', 10' 5509-5645', 5' 5645-5735', 10' 5735-5797', 5' 5797-5831'. Cemented with 300 sacks of 1.1 Pozmix, 22% NaCl 2% gel. Reciprocated casing 40' while circulating 30 minutes and during cementing. Bumped plug at 12:30 P.M., 7-26-56. Released pressure, float held. Set slips. Released Zach Brooks rig at 6:30 P.M., 7-26-56. To complete with pulling unit.

COMPLETION:

7-27-56: Preparing to log, moving off rig.

7-28-56: PBTD 5779' Ran Schlumberger Gamma Ray Neutron and Collar logs from TD to 2850'. Perforated "A-1" Zone 5456-5474' with Schlumberger's casing jet gun, 4 jets per foot. Ran tubing and circulated out with water.

7-29-56: Acidized "A-1" Zone 5456-5474' with 500 gallons of Dowell etching acid. Formation broke at 2500#, back to 2300#. Bled 1/2 barrel from casing. Began injecting at .4 BPM at 1300#. Pressure increased slowly to 2000# while injected remaining 3 barrels acid at .4 BPM. Final pressure 1750#. Bleed down pressure 1460#. Opened well to pit at 9:00 A.M. Flowed weak stream 30 minutes and died. Swabbed displacement oil, spent acid and began showing oil at 10:04 A.M. Swabbed 7 hours. On last 2 hours, swabbed at the rate of 16 BFPH, 60% water.

7-30-56: Testing "A-1" Zone. Shut well in overnight. SICP-725#, SITP-475#.

Opened well up. Flowed off head and began flowing small heads. Swabbed well 2 hours to pit, then 2 hours in test tank. 1st hour swabbed 10.5 BF, 90% water; 2nd hour swabbed 26 BF, 10% water. Fluid level lowered from 2000' to 3000' while swabbing in tank. Swabbed to pit 1 hour. Fluid level remained constant at 3000', water cut 15%. Put well on 16/64" choke. Well filled up and flowed 5 barrels in 11 hours. Flowed 2.30 BO in 6 hours flowing small weak heads. TFP - 0#, CP - 375#, 20/64" choke. To circulate water out of tubing with oil.

7-31-56: Flow rate on an 8-hour test - 96 BFPD, 25% BS&W (72 BOPD, 24 BWPD).

8-1-56: Circulating tubing out with oil. Tied in flowline. Flowed on a 2-hour test at the rate of 81 BFPD, 1.6% BS&W (80 BOPD, 1 BWPD), CFP - 450#, TFP - 0#.

8-2-56: Testing on open flow 49 BFPD, .6 of 1% BS&W.

8-3-56: Flowing on a 24-hour test at the rate of 61 BFPD, 4.5% BS&W (58 BOPD, 3 BWPD), CFP - 400#, TFP - 0#, open flow.

8-4-56: Flowing on a 4-hour test at the rate of 34 BFPD, 6% water (32 BOPD, 2 BWPD).

8-5-56: Flowing on a 4-hour test at the rate of 47 BFPD, 13% water (41 BOPD, 6 BWPD). Well produced 54 BOPD in tank.

8-6-56: Flowing on a 24-hour test at the rate of 49 BOPD plus 13% BS&W.

8-7-56: Setting pumping unit. 2-hour fluid test, flowed 65 BFPD, 10% water (58 BOPD, 7 BWPD). Production 32 barrels oil, flowed 12 hours through treater.

8-8-56: Setting pumping unit. Production 24 hours, open flow 43 barrels oil.

8-9-56: Flowing on a 24-hour test, open flow, 70 BFPD, 15% water (59 BOPD, 11 BWPD).

8-10-56: Setting pumping unit.

8-11&12-56: Waiting on pulling unit to pull tubing and run rods and moving in pulling unit.

8-13-56: Preparing to pump "A" Zone. Pulled 114 joints of tubing, put in pin collar and seating nipple. Ran rods.

8-15&16-56: Waiting on grout to set.

8-17&18-56: Pumping, no tests.

8-19-56: Pumping. On a 2-hour test pumped at the rate of 146 BFPD, 32% water (99 BOPD, 47 BWPD).

8-20-56: Pumping 211 BFPD, 28% water (152 BOPD, 59 BWPD). Pumping on 4½ x 16 SPM (barrel, 1 1/2" bore spaced at 3500').

8-21-56: Pumping rate 162 BFPD, 30% water (113 BOPD, 49 BWPD).

8-22-56: Pumping on a 3-hour test, pumped at the rate of 119 BFPD, 28% water (86 BOPD, 33 BWPD).

8-23-56: Pumping on a 17-hour test at the rate of 155 BFPD, 30% water (109 BOPD, 46 BWPD).

8-24-56: Pumping on a 6-hour test through treater at the rate of 173 BFPD, 28% water (125 BOPD, 46 BWPD). Potential test. To drop from report.

Completion Date (Tubing and Rod Record)

TUBING: 2 3/8", 4.70#, J-55, 8rd thd., Class "A" and "B" American:

Below RKB	6.75
Top joint	30.72
112 jts 2 3/8" tbg	3478.72
Seating nipple	1.16
1 joint	31.53
Pin collar	.50
62 joints 2 3/8" tbg	1934.47
Total	5483.85

ROD RECORD:
2 6' 3/4" scraper subs
1 8' 3/4" scraper subs
39 3/4" scraper rods
20 3/4" plain rods
80 5/8" plain rods
Axelson 2" x 1-1/2" x 16', top hold down insert pump

E.P.U. #80

E L E C T R O L O G D A T A

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	979'-5832'
Schlumberger Electrical Survey 5"	2000'-5832'
Schlumberger Microlog 5"	2000'-5831'
Schlumberger Gamma Ray Neutron 5"	2850'-5779'

LOG TOPS

Niobrara	2003	+ 66	
Greenhorn	2340	- 271	
Graneros	2545	- 476	
U. Muddy	2682	- 613	
Muddy Sd	2920	- 855	
Dakota	3114	-1045	
Vanguard	3902	-1833	
Rierdon	4085	-2016	
Piper Sh	4254	-2185	
Piper Ls	4338	-2269	
Gypsum Sprgs	4393	-2324	
Spearfish	4588	-2519	
Amsden	4693	-2624	
Heath	4825	-2756	
Otter	5030	-2961	
Kibbey Sd	5124	-3055	
Kibbey Por.	5150	-3081	
Kibbey Ls	5280	-3211	
Madison	5375	-3311	
A-1	5457	-3388	4'
A-2	5469	-3400	4'
A-3	5489	-3420	17'
A-4	5501	-3432	27'
B-1	5641	-3572	9'
B-2	5659	-3590	17'
B-3	5679	-3610	8'
B-4	5712	-3643	6'
B-5	5753	-3684	?
C-1	5794	-3725	?
C-2	5809	-3740	?

D R I L L S T E M T E S T S

D.S.T. #1: 5650.5'-5659' ("B-2" Zone) with Halliburton single packer test, 1/2" bottom choke, no water cushion. Tool opened with good blow and remained same thruout test. Tool open 2 hours, shut in 30 minutes. Recovered 2051' gas, 273' clean oil, 182' oily muddy salt water, and 1647' salt water. Pressures - IBHFP - 112#, FBHFP - 1745#, BHSIP - 2938#, Hydro - 3260#.

D.S.T. #2: 5634'-5646' ("B-1" Zone) with Halliburton straddle packer test, 1/2" bottom choke, no water cushion. Tool opened with medium blow and remained same thruout test. Tool open 2 hours, shut in 20 minutes. Recovered 546' gas, 30' clean oil, 60' oil-and-gas cut mud, and 800' salt water. Pressures - IBHFP - 30#, FBHFP - 440#, BHSIP - 2555#, Hydro - 3260#.

D.S.T. #3: (Misrun) 5669'-5686' ("B-3" Zone) Packer failed when set, misrun.

D.S.T. #3: (Rerun) 5669'-5686' ("B-3" Zone) with Halliburton double packers, bottom packer set at 5669', 1/2" bottom choke, no WC. Tool opened with weak blow, increased to medium blow in 15 minutes, and remained same thruout test. Tool open 2 hours, shut in 20 minutes. Recovered 795' salt water, no show of oil. Pressures: IBHFP - 30#, FBHFP - 385#, SIBHP - 2935#, Hydro - 3260#.

D.S.T. #4: 5790.5'-5808' to test fractures above "C" Intercrystalline zone, Halliburton single packer test, 1/2" bottom choke, 1/4" top choke, no water cushion. Tool opened with good blow and remained same thruout test. Tool open 2 hours, shut in 20 minutes. Recovered 3367' muddy salt water. IBHFP - 58#, FBHFP - 1582#, BHSIP - 3070#, Hydro - 3315#.

D.S.T. #5: 5485.5'-5496' ("A" Zone) with Halliburton hookwall test, set straddle packer. 1/2" bottom choke, no water cushion. Tool opened with weak blow, increased to medium blow after 15 minutes and remained same thruout test. Tool open 2 hours, shut in 20 minutes. Recovered 200' gas, 45' clean oil, 45' mud-cut oil, and 130' salt water. Pressures: IBHFP - 30#, FBHFP - 112#, BHSIP - 2990#, Hydro - 3152#.

CORE ANALYSIS REPORTS

Company MURPHY CORPORATION Date 7-25-56 Lab No. 2742 Well No. Unit #80 Location C SW NW 3-28N-51E

Formation B-1, B-2 & B-3 Zones Field East Poplar County Roosevelt State Montana Depths 5625-5689.0'

Sample No.	Interval Feet	Footage	PERMEABILITY Max.	PERMEABILITY 90°	PERMEABILITY Matrix	Total Porosity Per Cent	SATURATION % PORE SPACE Residual Oil	SATURATION % PORE SPACE Water
			Core No. 1 5652-59' Cut 34' Recovered 33'					
	5625-35.5	10.5	-	-		-	-	-
			B-1 Zone					
1	5635.5-35.8	0.3	0.4	0.4		7.2	Trace	100.0
	5635.8-36.6	0.8	-	-		7.2	Trace	100.0
2	5636.6-37.3	0.7	-	-	4.8	12.5	Trace	78.4
3	5637.3-38.2	0.9	5.9	4.0		4.2	Trace	81.0
	5638.2-38.5	0.3	-	-		4.2	Trace	81.0
4	5638.5-39.3	0.8	3.7	2.1		6.4	Trace	39.1
5	5639.3-40.2	0.9	4.8	1.6		7.6	14.5	61.8
6	5640.2-41.5	1.3	3.4	2.5		10.6	Trace	90.6
	5641.5-42.5	1.0	-	-		-	-	-
	5642.5-53.5	11.0	-	-		-	-	-
			B-2 Zone					
7	5653.5-54.0	0.5	17	11		11.4	7.9	51.8
8	5654.0-55.2	1.2	7.4	5.6		17.4	Trace	50.3
9	5655.2-55.7	0.5	13	11		16.7	8.4	54.5
10	5655.7-56.3	0.6	2.6	2.5		10.6	1.9	66.0
11	5656.3-58.0	1.7	9.3	6.1		15.2	11.2	48.0
	5658.0-59.0	1.0	-	-		-	-	-
			Core No. 2 5659-86' Cut 27' Recovered 30'					

CORE ANALYSIS REPORTS CONTINUED

Sample No.	Interval Feet	Footage	PERMEABILITY Max.	90°	Matrix	Total Porosity Per Cent	SATURATION % PORE SPACE Residual Oil	Water
12	5659.0-59.7	0.7	2.8	0.1		16.7	1.2	61.1
13	5659.7-60.4	0.7	6.3	4.4		9.5	Trace	100.0
14	5660.4-61.0	0.6	311	192		8.3	Trace	75.9
15	5661.0-61.8	0.8	2.0	0.2		6.4	Trace	100.0
	5661.8-63.1	1.3	-	-		6.4	Trace	100.0
16	5663.1-64.1	1.0	13	6.9		16.3	Trace	57.7
17	5664.1-65.0	0.9	6.4	4.5		19.7	Trace	47.7
18	5665.0-66.0	1.0	14	7.6		13.3	2.3	97.7
19	5666.0-67.0	1.0	11	9.0		16.7	1.0	99.0
20	5667.0-68.0	1.0	20	7.9		20.1	Trace	79.6
21	5668.0-69.0	1.0	13	12		16.7	7.2	87.4
	5669.0-75.0	6.0	-	-		-	-	-
				B-3 Zone				
22	5675.0-76.0	1.0	0.7	0.6		14.1	Trace	85.0
23	5676.0-77.0	1.0	1.7	1.3		18.9	Trace	92.1
24	5677.0-78.0	1.0	1.4	1.2		16.7	Trace	73.7
25	5678.0-79.4	1.4	1.1	0.6		14.5	Trace	89.7
	5679.4-79.8	0.4	-	-		14.5	Trace	89.7
26	5679.8-80.5	0.7	1.2	0.7		13.5	Trace	26.7
27	5680.5-81.0	0.5	0.6	0.5		13.8	Trace	96.4
	5681.0-89.0	8.0	-	-		-	-	-
				SUMMARY				
				B-1 Zone				
	5635.5-41.5	6.0	4.1*			7.9	Trace (14.5)	79.2
				B-2 Zone				
	5653.5-58.0	4.5	9.2			14.9	6.3	52.2
	5659.0-69.0	10.0	31*			13.8	1.1	83.3
				B-3 Zone				
	5675.0-81.0	6.0	1.2*			15.4	Trace	79.9

*Does not include permeability of open fractures. B-1 Zone has 1.8' of open fractures; B-2 Zone 1.3' and B-3 Zone 0.4'. Production tests required to determine type of fluid recovery from fractures. Fractures could load into oil.

CORE DESCRIPTIONS

Core No. 1 5625 - 5659, recovered 33':

3'6" Anhydrite: hard, gray, dense salt inclusions.

7'0" Anhydrite: hard, dark gray, dense, no salt.

7'0" Limestone: dark gray brown, finely crystalline with good permeability and porosity, good oil odor, spotted to even staining 1 1/2', 2" from top of unit, hard tight, poor permeability and porosity.

11'0" Anhydrite: hard, dense, dark gray.

4'6" Limestone: dark gray, brown, finely crystalline, good oil odor, spotted florescence, fair permeability and porosity.

Core No. 2 5659 - 5686, recovered 30':

10'0" Limestone: dark gray brown, finely crystalline, spotted golden florescence, poor to fair permeability and porosity, sulfur odor at bottom of unit.

6'0" Limestone: black banded, lithographic thin bands of saturation, permeability and porosity.

6'0" Dolomite: limy at top, becoming more dolomitic with depth, light gray brown, earthy, fair oil odor and spotty florescence.

8'0" Anhydrite: light gray, dense.

Core No. 3 5785 - 5808, recovered 20':

4'6" Limestone: black hard, dense, no permeability and porosity, no show, bottom 1 1/2' of unit open vertical fracture, no show on fracture planes.

0'6" Limestone: dark brown, micro crystalline, poor permeability and porosity, spotted golden florescence, weak oil odor.

5'6" Limestone: dark gray to black, dense, no permeability and porosity, open vertical fractures with spotted florescence on fracture plane, no matrix show.

0'6" Limestone: dark gray brown, micro crystalline, poor permeability and porosity, spotted golden florescence, weak oil odor.

9'0" Limestone: dark gray to black, dense, open vertical fractures, no show on fracture planes; scattered anhydrite inclusions top 2 1/2' unit.

MUD PROGRAM SUMMARY

MUD SERVICE CO.: Period

MUD ADDITIVES AND COST:

Material	Surface Hole Amt.	Surface Hole Cost	Surface - T.D. Amt.	Surface - T.D. Cost	Total Amt.	Total Cost
Aquagel			90	207.00	90	207.00
Barafos	6	165.00			6	165.00
Baried	738	2,258.28			738	2,258.28
Carbonox			13	65.00	13	65.00
Caustic			52	709.80	52	709.80
Driscose			12	540.00	12	540.00
Hulls			27	126.90	27	126.90
Smentox	4	28.24	2	14.12	6	42.36
Tannex	11	148.50	79	1,066.50	90	1,215.00
Fibertex			7	28.00	7	28.00
Cement	5	9.50			5	9.50
Total Mud		2,609.52		2,757.32		5,366.84
Drayage		475.33		74.51		549.84
TOTAL		3,084.85		2,831.83		5,916.68
Crude Oil			165	429.00	165	429.00
TOTAL		3,084.85		3,260.83		6,345.68

UNIT MUD COSTS:	Total Cost	Feet Drld.	Cost/Ft.	Days Used	Cost/Day
Spud - T.D.	6,345.68	5823	1.09	25	253.83
Spud - Surface	3,084.85	990	3.12	5	616.97
Surface - T.D.	3,260.83	4833	.67	20	163.04

MUD PROPERTIES:

Depth	Weight	Viscosity	Water Loss	pH	Salt	% Crude	Remarks
700	12.5	59					
4468	10.45	36	10.4	12.8	Nil		Before Adding Crude oil
4859	10.5	51	9.2	12.5	500	6	
5130	10.3	54	7.4	12.5	900	8	
5412	10.6	59	7.2	12.5	2500	7	
5658	10.6	56	7.4	11.5	20,000	7	Drld Salt
5730	10.5	66	11.1	11.5	25,000	8	
5808	10.7 - 10.4	53	8.4 wt. 10.7. material.	11.5	22,000	8	Lost Circ w/ Cut wt to 10.4 & added lost circ.
5823	10.5	68	7.2	11.5	23,000	7	

Mud Program Summary

SUMMARY:

Weighted up to 12.5 # per gallon with Baroid at 600' to drill Judith River Gas Sand. Tannex was used as a thinner for surface mud.

Drilled to 5350' with water and native mud. At this depth mud converted to high pH red mud with 100#/50# caustic soda - tannex. After weight built up to 10.5# per gallon 25 barrels crude oil were added on successive days. There after 20 barrels were added daily. Caustic soda - tannex and caustic - carbonox were alternately used as treatments. Driscose was used to keep water loss below 10 cc while drilling producing zones.

Three cores were cut and 5 drill stem tests run including Test #5 with Halliburton open hole hook wall to test the A zone from 5485.5-5496' after drilling to TD. No difficulty was encountered running logs and casing.

The lost circulation at 5823' and the mud properties required to run the open hole hook wall test accounted for the above normal mud cost below surface.

EPU NO. 80

DRILLING BIT RECORD

Bit No.	Make	Size	Type	Ser. No	Depth Out
	Security	17 1/2"	Pilot	Re-run	175
	"	12 1/4"	S3	Re-run	990
1	"	8 3/4"	S3	133932	3030
2	"	"	S4	135158	3505
3	Hughes	"	OWV	28981	3505
4	Security	"	S6	134190	3730
5	"	"	S6J	135498	3990
6	"	"	"	135102	4319
7	"	"	S6	135479	4482
8	"	"	S6J	135214	4725
9	Hughes	"	OWV	28982	4915
10	"	"	"	28313	5000
11	"	"	"	28308	5112
12	Security	"	M4N	132437	5204
13	"	"	"	133238	5270
14	Hughes	"	OWV	29496	5350
15	"	"	"	25808	5550
16	"	"	"	85346	5625
17	"	"	"	42045	5780
18	"	"	"	28985	5823 TD

TOTCO RECORD

Depth Out	Degrees Off
400	1
1716	1
3714	3/4
4884	3/4
5204	3/4
5523	1/2

Christensen Diamond Bit Coring Record
Bit No. A-5968 6 1/8 x 3 1/2"

Core No.	From	To	Footage
1	5625	5629	34'
2	5659	5686	27'
3	5785	5808	23'
			84'

SAMPLE DESCRIPTION

2000	2120	Shale: light gray with white calcareous specks, traces of fine grain sand.
2120	2340	Shale: light gray shale.
2340		Sample Top Greenhorn
2340	2460	Shale: gray with tan to buff calcareous specks.
2460	2540	Shale: light gray traces of white limestone.
2540	2700	Shale: light gray with traces of brown sandy shale.
2700	2900	Shale: gray with traces of light gray waxy siltstone; traces of medium grained white sand, no show.
2905		Sample Top Muddy
2900	2980	Sand: medium grained gray, poor permeability and porosity, no show, salt and pepper appearance, dark gray shale.
2980	3110	Shale: dark gray siltstone.
3110		Sample Top Dakota Siltstone
3110	3320	Shale: gray micaceous traces of medium grained sand, no show.
3320	3380	Sand: light gray, hard, tight, fine grained.
3380	3460	Shale: light gray, hard fine grained, gray sand.
3460	3520	Sand: light gray to white hard, tight, fine grained.
3520	3560	Shale: dark gray splintery shale, trace of above sand.
Swift? 3560	3600	Sand: dark gray, glaconitic shale as above, traces of buff colored limestone.
3600	3760	Shale: dark gray to black with stringers of gray glauconitic sand.
3760	3900	Shale: dark gray, traces of above sand.
3900		Sample Top Vanguard
3900	3960	Sand: fine grained, gray, hard, well cemented, fair permeability and porosity, no show; shale as above.

3960	4090	Shale: dark gray to black, trace of above sand.
4085		Sample Top Rierdon
4090	4140	Sand: medium trace fine grained, well rounded and cemented; fair permeability and porosity, no show, gray black shale.
4140	4250	Shale: dark gray to black, traces of pyrite and mica, traces of above sand.
4250		Sample Top Piper Shale
4250	4330	Shale: dark gray with trace of red sandy shale.
4330		Sample Top Piper Shale
4330	4400	Limestone: dark gray and buff colored limestone, also a light gray shaley limestone.
4400		Sample Top Gypsum Springs
4400	4590	Shale: light gray traces of red; traces of soft, white anhydrite; some buff colored limestone.
4590		Sample Top Spearfish
4590	4620	Sand: red, shaley with the above sand, light gray shale.
4620	4700	Shale: dark red sandy shale.
4700		Sample Top Amsden
4700	4710	Sand: as above with trace of tan, dense limestone and white dolomite.
4710	4810	Shale: gray and red with stringers of limestone.
4810	4820	Shale: as above with traces of limestone.
4820		Sample Top Heath
4830	4840	Sand: red, hard, dense quartz; no permeability, no show. Circulated out samples 4845. Sample description: Sand: medium grained red and white, poor permeability and porosity, sub angular, no show.
4840	4860	Sand: as above.
4860	4990	Shale: multi-color red, black and grays, traces of the above sand.
4995		Sample Top Otter

4990	5010	Shale: multi-colored with traces of green shale, some white and buff colored limestone.
5010	5060	Shale: as above with increase in limestone.
5060	5170	Limestone: white to buff with trace of permeability and porosity in fine grained limestone, shale as above.
5120		Sample Top Kibbey Sand
5120	5200	Sand: fine to medium, hard, tight, poor to no permeability and porosity, no show.
5200	5230	Shale: multi-colored black and red with stringers of above sand.
5230	5260	Sand: medium grained, fair permeability and porosity, stringers of soft white limestone.
5260	5280	Sand: as above with inter-bedded black massive shale.
5280		Sample Top Kibbey
5280	5300	Limestone: light gray, fine grained to dense white soft, amorphous traces of black marine shale.
5300	5370	Shale: dark gray to black with traces of above limestone.
5375		Sample Top Madison
5370	5420	Anhydrite: soft white, dark gray, dense; traces of gray bedded limestone.
5420	5430	Limestone: dark gray, dense with dense gray anhydrite.
5430	5440	Anhydrite: light gray to white, hard, dense.
5440	5450	Limestone: dark gray, dense, traces of above anhydrite.
5450	5480	Limestone: dark gray to black, finely crystalline with fair intergranular permeability and porosity, spotted golden florescense, good cclh cut.
5480	5500	Anhydrite: dark gray to white, hard, dense.
5500	5520	Limestone: dark gray to black, fine crystalline; traces of oolitic, fair permeability and porosity, fair golden florescence and cut.
5520	5560	Anhydrite and limestone: dark gray, dense limestone, gray to white anhydrite.
5560	5590	Salt Section

Sample Description Continued

5590	5625	Anhydrite:	dark gray, dense.
5625		Core No. 1	5625-5659
5659		Core No. 2	5659-5686
5680	5710	Anhydrite:	dark gray, dense, stringers of limestone.
5710	5720	Limestone:	dark gray to black, dense with stringers of above anhydrite.
5730	5740	Anhydrite:	dark gray, dense.
5740	5750	Limestone:	dark gray to black, dense.
5750	5785	Anhydrite:	dark gray, dense.
5785	5808	Core No. 3	Cut 23', Recovered 20'.

Location: SW NW Sec. 3-T28N-R51E
Spacing - 160 acres
Elevation: 2069 K.B. - 2049 Gr.
Spudded: 7-2-56
Completed: 7-29-56
T.D.: 5832' Driller - 5823 Schl.
Prod. Zones: A-1 (5456-5474)

Schlumberger Tops

	Depth	Datum	Thickness
udith River	----	-----	
reenhorn	2340	- 271	
uddy Sd	2904	- 835	
akota Silt	3110	-1041	
iper Ls	4340	-2271	
msden	4693	-2624	
eath	4845	-2776	
tter	4992	-2923	
ibbey Sd	5124	-3055	
ibbey Ls	5280	-3211	
adison	5375	-3306	
-1	5457	-3388	4'
-2	*5469	-3400	4'
-3	*5489	-3420	17'
-4	*5501	-3432	27'
-1	*5641	-3572	9'
-2	*5659	-3590	17'
-3	*5679	-3610	7'
-4	5712	-3643	6'
-5	5753	-3684	?
-1	*5794	-3725	?
-2	5809	-3740	?

**Probable prod. Zones (From DST structural position, etc.
*Shows

Drill Pipe Corrections (Made)
4480 Driller - 4490 SLM (+10')

Coring Intervals:
#1 5625-5659 Rec. 33' B-1
#2 5659-5686 Rec. 30' B-2 & 3
#3 5785-5808 Rec. 20' C-1 & 2

Drill Stem Tests:
DST #1 5650.5-5659 B-2 w/Hall sngle pkr test, ½" bot cke, no W.C. Tool opnd w/good blo & remained thruout. Tool opn 2 hrs, SI 30 min. Rec. 2051' gas, 273' cln oil, 182' oily muddy s.w. & 1647' salt wtr. Press. IBHFP 112, FBHFP 1745, BHSIP 2988, Hydro 3260.
DST #2 5634-5646 B-1. w/Hall strdl pkr test, ½" bot cke, no W.C. Tool opnd w/med blo & remained same thruout test. Tool Opn 2 hrs, SI 20 min. Rec. 546' gas, 30' cln oil, 60' o & g cut mud & 800' s.w. IBHFP 30 FBHFP 440, BHSIP 2555, Hydro 3260.
DST #3 5669-5686 B-3. Pkr failed when set. Mis-run.
DST #3 re-run 5669-5686 B-3 .w/Hall dbl pkrs, bot pkr set at 5669', ½" bot cke, no W.C. Tool opnd w/weak blo, incrsd to med blo in 15 min & remained same thruout test. Tool opn 2 hrs, SI 20 min. Rec. 795' s.w., no show of oil. IBHFP 30, FBHFP 385, BHSIP 2935, Hydro 3260.
DST #4 5790.5-5808 C-1. Hall sngle pkr test, ½" bot cke, ¼" top cke, no W.C. Tool opnd w/good blo & remained same thruout test. Opn 2 hrs, SI 20 min. Rec. 3367' muddy s.w. IBHFP 58, FBHFP 1582, BHSIP 3070, Hydro 3315.
DST #5 5485.5-5496' A-3. w/Hall hookwall test, set strdl pkr, ½" bot cke, no W.C. Tool opnd w/weak blo, incr to med blo, after 15 min remained same thruout test. Tool opn 2 hrs, SI 20 min. Rec. 200' gas, 45' cln oil, 45' mud-cut oil & 130' s.w. IBHFP 30 FBHFP 112 BHSIP 2990 Hydro 3152.

History Subsequent to Completion:
None

OPERATOR Murphy Corporation LAB. NO. 2742 PAGE NO. 2

Sample No.	Interval Feet	Footage	PERMEABILITY, Md. K Max.	K 90°	K Matrix	K Vertical	Total Porosity Per Cent	SATURATION % PORE SPACE Residual Oil	Water	Matrix Density	DESCRIPTION
14	5660.4-61.0	0.6	311	192		4.3	8.3	Trace	75.9		HF VF
15	5661.0-61.8	0.8	2.0	0.2		0.4	6.4	Trace	100.0		
	5661.8-63.1	1.3	-	-		-	6.4	Trace	100.0		OVF Similar to No. 15
16	5663.1-64.1	1.0	13	6.9		12	16.3	Trace	57.7		
17	5664.1-65.0	0.9	6.4	4.5		5.1	19.7	Trace	47.7		
18	5665.0-66.0	1.0	14	7.6		3.2	13.3	2.3	97.7		
19	5666.0-67.0	1.0	11	9.0		10	16.7	1.0	99.0		
20	5667.0-68.0	1.0	20	7.9		6.2	20.1	Trace	79.6		
21	5668.0-69.0	1.0	13	12		16	16.7	7.2	87.4		
	5669.0-75.0	6.0	-	-		-	-	-	-		Dense
					B-3 Zone						
22	5675.0-76.0	1.0	0.7	0.6		0.3	14.1	Trace	85.0		
23	5676.0-77.0	1.0	1.7	1.3		0.4	18.9	Trace	92.1		
24	5677.0-78.0	1.0	1.4	1.2		0.7	16.7	Trace	72.7		
25	5678.0-79.4	1.4	1.1	0.6		0.5	14.5	Trace	89.7		
	5679.4-79.8	0.4	-	-		-	14.5	Trace	89.7		OIF Similar to No. 25
26	5679.8-80.5	0.7	1.2	0.7		0.3	13.5	Trace	26.7		
27	5680.5-81.0	0.5	0.6	0.5		0.3	13.8	Trace	96.4		
	5681.0-89.0	8.0	-	-		-	-	-	-		Anhydrite

SUMMARY

							Probable Production
B-1 Zone							
	5635.5-41.5	6.0	4.1*		7.9	Trace-14.5	79.2	Water
B-2 Zone							
	5653.5-58.0	4.5	9.2		14.9	6.3	52.2	Oil & Water
	5659.0-69.0	10.0	31*		13.8	1.1	83.3	Water
B-3 Zone							
	5675.0-81.0	6.0	1.2*		15.4	Trace	79.9	Water

*Does not include permeability of open fractures. B-1 Zone has 1.8' of open fractures; B-2 Zone 1.3' and B-3 Zone 0.4'. Production tests required to determine type of fluid recovery from fractures. Fractures could lead into oil.

Sample No.	Interval Feet	Footage	PERMEABILITY, Md. K Max	K 90'	K Matrix	K Vertical	Total Porosity Per Cent	SATURATION % PORE SPACE Residual Oil	Water	Matrix Density	DESCRIPTION

OVF = Open Vertical Fracture (slabs) VF = Vertical Fracture V = Vuggy

OIF = Open Inclined Fracture HF = Horizontal Fracture

CORE DESCRIPTION

by Kent Brouillette

CORE NO. 1 5625-59' Cut 34' Rec. 33'

2' Anhydrite; hard dense dark grey with salt inclusions.

7' Anhydrite, hard dense dark grey. No salt.

B-1 2' Limestone; dark grey brown finely crystalline with good porosity and permeability; good oil odor; spotty to even staining 1½', 2' from top of unit. Hard tight; poor porosity and permeability.

11' Anhydrite; hard dense dark grey.

B-2 4' Limestone; dark grey brown finely crystalline; good oil odor; good fluorescense; fair porosity and permeability.

CORE NO. 2 5659-86' Cut 27' Rec. 30'

B-2 10' Limestone; dark grey brown finely crystalline spotty golden fluorescense. Poor to fair porosity and permeability; sulfur odor at bottom of unit.

6' Limestone; black; lithographic; thinly banded saturation and porosity and permeability.

B-3 6' Dolomite; limey at top becoming more dolomitic with depth; light grey brown earthy; fair oil odor top 3'; spotty fluorescense; poor to fair porosity and permeability.

8' Anhydrite; light grey dense.

WORKOVER HISTORY NO. I

July 15, 1958

Lease and Well No.: East Poplar Unit Well No.80

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW NW Section 3, T28N, R51E

Status Prior to Present Job:

Date Completed: July 29, 1958 Date Last Workover: None

T.D.: 5832' PBTD: 5779' Producing Zone: "A " Zone of Madison Formation Perforations: 5456'-5474' Cumulative Production

Present Zone: 36,479 Bbls. Oil; 27,316 Bbls. Water Latest Test: Pumping 68 BFPD, 84% Water (11 BOPD, 57 BWPD)

Justification for Workover: Increase fluid production.

Summary of Workover:

6-18-58 (First Report of Workover #1 to acidize with 1000 gallons to increase production. Last well test made on June 17, 1958, 24 hour test, 68 BFPD, 84% water (11 BOPD, 57 BWPD).
Acidized "A " Zone (5456'-5474') with 1000 gallons Halliburton HF acid. Spotted acid down casing. Injected 16 bbls acid at rate of .2 BPM at 1400 psi. Injected last 8 bbls acid at rate of 1/2 BPM at 2000 psi. Injection pressure governed by well head equipment. Bleed down pressure 1100 psi. Started well to pumping. Will test today.

6-19-58 PBTD 5779'. On a 2 hour test, pumped at the rate of 86 BFPD, 37% water (54 BOPD, 32 BWPD). Pumping load oil.

6-20-58 PBTD 5779'; on a 21 hour test, pumped at rate of 130 BFPD, 32% water (88 BOPD, 42 BWPD).

6-21-58 PBTD 5779'; on a 21 hour test, pumped at rate of 113 BFPD, 75% water (28 BOPD, 85 BWPD).

6-22-58 PBTD 5779'. No test.

6-23-58 PBTD 5779'. On a 24 hour test, pumped 106 BFPD, 76% water (26 BOPD; 80 BWPD). This is the workover potential test for the A Zone. To drop from report.

Recap of Workover:

1. Final Perforations: 5456'-5474' Unchanged

2. Final PBTD: 5779' Unchanged

3. Initial Potential after Workover: Pumping 106 BFPD, 76% Water (26 BOPD, 80 BWPD)

4. Geologic Name of Producing Zone: "A " Zone of Madison Formation

5. Downhole Equipment: Unchanged

Results of Workover: Oil production increased from 11 BOPD to 26 BOPD, water cut decreased slightly. Workover successful.

WORKOVER HISTORY NO. 2 March 25, 1959

Lease and Well Number: East Poplar Unit Well No. 80

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW NW/Section 3, T28N, R51E

Status Prior to Present Job:

Date Completed: July 29, 1956 Date of Last Workover: June 23, 1958

T.D.: 5832' PBTD: 5779' Producing Zone: A Zone of Madison Formation Perforations: 5456'-5474' Cumulative Production through December, 1958: 42,254 BO and 40,665 BW Latest Test: March 3, 1959, pumping 14 BOPD, 47 BWPD.

Justification for Workover: to increase production.

Summary of Workover:

3-18-59 PBTD 5779' - Acidized A Zone (5456'-5474') with 3000 gallons HV acid. Spotted acid down casing annulus. Injected acid at the rate of 3 BPM at 2300#. Over-flushed acid with 10 barrels oil. Bleed down pressure 1900#. Left acid on formation 4 hours, then started pumping.

3-19-59 PBTD 5779' - No test, will test today.

3-20-59 PBTD 5779' - On 4 hour test, pumped at the rate of 106 BFPD, 83% water (18 BOPD, 88 BWPD).

3-21-59 PBTD 5779' - On 24 hour test, pumped at the rate of 102 BFPD, 76% water (24 BOPD, 77 BWPD).

3-22-59 PBTD 5779' - On 24 hour test, pumped at the rate of 98 BFPD, 71% water (28 BOPD, 70 BWPD).

3-23-59 PBTD 5779' - No test.

3-24-59 PBTD 5779' - On 3 hour test, pumped at the rate of 108 BFPD, 74% water (28 BOPD, 80 BWPD). This is the Workover Potential, to drop from report.

Recap of Workover:

1. Final Perforations: 5456'-5474' (unchanged)

2. Final PBTD: 5779' (unchanged)

3. Workover Potential: Pumping 108 BFPD, 74% water (28 BOPD, 80 BWPD).

4. Geologic Name of Producing Zone: A Zone of Madison Formation (unchanged)

5. Downhole Equipment: Unchanged

Results of Workover: Oil production increased from 14 BPD to 28 BPD and water production increased from 47 BPD to 80 BPD. Workover Successful.

WORKOVER HISTORY NO. 3

December 27, 1963

WELL LEASE AND NUMBER: East Poplar Unit Well No. 30

FIELD: East Poplar Unit COUNTY: Roosevelt STATE: Montana

WELL LOCATION: SW NW Section 3, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: July 29, 1956 Date of Last Workover : April 29, 1960

T.D. : 5832' PBTD: 5779' Producing Zone: A-- & A-- of Madison Formation

Perforations: 5456-5474 & 5492' Cumulative Production of Present Zone: 48,150 BO

67,500 BW Latest Test: Shut in and depleted

JUSTIFICATION FOR WORKOVER: To prepare for Salt Water Disposal

SUMMARY OF WORKOVER:

12-27-63 PBTD 3575' - Rigged up pulling unit and layed down 5483' of 2-1/8" tbg. Ran J.B. & G.R. on Wireline to 5300'. Ran Baker Model "K" C.I. bridge plug on Wireline and set at 3600'. Dumped one sack cmt. on top of bridge plug using dump bailer. Perforated 3595' to 3596' with 4 shots per ft. Set Baker Model "K" cmt. retainer on Wireline at 3575'. Shut in overnite.

12-28-63 PBTD 3575' - Ran 3575' of 2-7/8" tubing stung into Model "K" cmt. retainer at 3596', broke circulations outside of 5-1/2" casing with 1800# at the rate of 6 BPM. Circulated out mud and shut down overnite waiting on cement.

12-29-63 PBTD 3575' - Cemented 5-1/2" casing with 300 sacks 1 to 1 posmix with 8% gel tailed in with 100 sacks 1 to 1 posmix 2% gel displaced cement through Model "K" cmt. retainer at 3575' out perf. at 3596' Full returns out surface casing while cementing. Maximum pressure 3000#. Released pressure. Back pressure valve would not hold. Circulated out under pressure. Caught cement flag. Shut in overnite.

12-30-63 PBTD 3575' - Tested cement job, would not hold. Pumping into formation with 800# at the rate of 1 BPM. Shut down overnite waiting on HOWCO pump truck to test to determine if hole will circulate and recement.

SUMMARY OF WORKOVER CONTINUED:

12-31-63 PBTD 3575' - Broke formation through perf. at 3295' with approximately 75 bbls. water, did not circulate. Pumped into formation at the rate of 5 BPM, 1800# pressure. Cemented with 150 sacks regular cement with 100# Halide #9 added. Pumped into formation at 1300#, stopped pump and pressure dropped to 1400# immediately and slowly bled to 1000# and stabilized. Shut in overnite.

1-01-64 PBTD 3575' - Tested cmt. job to 2000#, held. Wireline perforated with 4 shots per foot from 3218' to 3250'. Formation broke down at 2000#. Injected 256 bbls. water at the rate of 10 BPM and 2400 PSI. Made run with dummy gun, could not get below 3525' because of cmt. in casing. Wireline perforated with 4 shots per foot from 3462' to 3512' and 3284' to 3410'. Set packer at 3275' and broke formation down at 2000 PSI. Injected 100 bbls. water at the rate of 8 BPM and 2800 PSI. Dropped 100 RCN balls and injected 143 bbls. at the rate of 8 BPM and 2900 PSI. Dropped 25 RCN balls, injected 190 bbls. at the rate of 8 BPM and 2900 PSI. Dropped 25 RCN balls and injected 271 bbls. at the rate of 8 BPM and 2900 PSI. Reset packer and pumped into perforation 3462'-3512'. Injected a total of 120 bbls. water at the rate of 8 BPM and 3050 PSI. 7 BPM and 3000 PSI, 5 BPM and 2800 PSI, and 3 BPM and 2200 PSI. Reset packer at 3197' and injected into all perforations 50 bbls. at the rate of 9½ BPM and 2400 PSI, 100 bbls. at 7 BPM and 1900 PSI, 150 bbls. at 4½ BPM and 1500 PSI and 120 bbls at 3 BPM and 1200 PSI. Instant shut in pressure 1000 PSI. 5 min. bleed down 800 PSI. Shut well in over holidays. (Perforated with wireline through tubing gun.)

1-02-64 PBTD 3575' - Ran tubing with Larkin Neoseal Rock Wall Packer. Packer would not set. Came out of hole with tubing. Packer rubber damaged and slips were dull. Shut in overnite.

1-03-64 PBTD 3575' - Ran 93 jts. 3-1/2" Tube Cote Tubing with Baker Model "R" Packer with 2" bore. Circulated annulus with 59 bbls. of fresh water with 15 gal. of inhibator added and 2 bbls. oil on top. Set Packer at 2934'. To Drop From Report.

1-13-64 PBTD 3575' - Station started in operation January 9, 1964, with 800# pressure. Pressure dropped to 400# by Friday, January 10, 1964. Injecting at the rate of 3.7 BPM (5328 BPD) and maintaining 390# pressure. TO DROP FROM REPORT.

RECAP OF WORKOVER:

1. Final Perforations: 3218'-3250', 3462'-3512', 3284'-3410'

2. Final PBTD: 3575'

3. Geologic Name: EPU #80-D Salt Water Disposal (DAKOTA SAND)

RECEIVED

WORKOVER HISTORY NO. 3

April 29, 1960 MAY 16 1960

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

Lease and Well Number: East Poplar Unit Well No. 80

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW NW Section 3, T28N, R51E

Status Prior to Present Job:

Date Completed: July 29, 1956 Date of Last Workover: March 24, 1959

T.D.: 5832 PBTD: 5779 Producing Zone: A zone of Madison Formation

Perforations: 5456-5474 Cumulative Production 47,764 BO, 56,391 BW

Latest Test: Pumping 4 BOPD, 34 BWPD

Justification for Workover: Present production uneconomical.

Summary of Workover:

4-11-60 PBTD 5779'. Rigged up pulling unit & pulled rods and tubing. Ran tubing with collar locator and abrasive jet. Picked collars on short joint of casing at 5645' and 5621'. Tubing measurements were .48' deeper. Zeroed in on casing collars. Installed well head and shut in overnight.

4-12-60 PBTD 5779'. Perforated A zone 5492' with Dowell Abrasive jet. Cut 2 notches 3" wide. Made trip with tubing to remove abrasive jet and pick up company owned lane wells packer. Packer failed. Made trip to pick up Baker full bore packer to swab test.

4-13-60 PBTD 5779'. Ran tubing with Baker full bore packer. Set packer at 5480' and swabbed A zone perforations 5492'. Swabbed dry with show of oil. Acidized A zone perforations 5492' with 500 gallons Dowell etching acid. Pressured up to 3000# and let acid soak, keeping pressure built to 3000#. Injected 2.5 barrels acid in 2 hours. Increased pressure to 3900#. Formation broke back to 1600# with 5 barrels acid in formation. Injected remainder of acid at rate of ½ BPM at 1600#. Opened to pit, flowed 1" stream. Swabbed 1 hour. Recovered salt water, spent acid and oil. Water cut at end of swabbing 60% water. Fluid level standing 2000#feet from top.

4-14-60 PBTD 5779'. Made trip with tubing to remove packer. Ran 2" x 1 3/4" x 15' tubing liner pump spaced at 3500'. Fluid entry 5500'. Started pumping at 1-15 p.m., April 14, 1960. Water cut 99%.

4-15-60 PBTD 5779'. Pumping on 44" stroke, 15 SPM, 3 hr. test. Pumped 260 BFPD 100% water.

4-16-60 PBTD 5779'. Pumping on 64" stroke, 15 SPM, pumped 292 BFPD, 100% water.

4-17-60 PBTD 5779'. Pumped at rate of 315 BFPD, 100% water.

4-18-60 PBTD 5779'. Pumping at rate of 319 BFPD, 98 % water. (313 BWPD, 6 BOPD).

4-19-60 PBTD 5779'. Pumping, no test. Water cut 90%.

4-20-60 PBTD 5779'. Pumping, 3 hr. test. Pumped at rate of 325 BFPD, 95 % water. (16 BOPD, 309 BWPD).

4-21-60 PBTD 5779'. Pumping 381 BFPD, 98% water. (8 BOPD, 373 BWPD).

4-22-60 PBTD 5779'. Pumping, no test. 98% water.

4-23-60 PBTD 5779'. Pumping, 4 hr. test. Pumped at rate of 390 BFPD, 95 % water. (20 BOPD, 370 BWPD).

4-24-60 PBTD 5779'. Pumping, no test.

4-25-60 PBTD 5779'. Pumping, 4 hr. test. Pumped at rate of 365 BFPD, 97% water. (11 BOPD, 354 BWPD).

4-26-60 PBTD 5779'. Pumping, no test.

4-27-60 PBTD 5779'. Water draw test, 368 BFPD, 98% water. (7 BOPD, 361 BWPD). This is the A zone potential test. To Drop from Report.

Recap of Workover:

1. Final Perforations: 5456-5474; and 5492
2. Final PBTD 5779'. (unchanged)
3. Workover Potential: Pumping 7 BOPD, 361 BWPD.
4. Geologic name of Producing zone: A zone of Madison formation.
5. Downhole equipment: Unchanged

Results of Workover:

Oil production increased from 4 BOPD to 7 BOPD. Water production increased from 34 BWPD to 361 BWPD. Workover unsuccessful.

WORKOVER HISTORY NO. 4

December 27, 1963

WELL LEASE AND NUMBER: East Poplar Unit Well No. 80

FIELD: East Poplar Unit COUNTY: Roosevelt STATE: Montana

WELL LOCATION: SW NW Section 3, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: July 29, 1956 Date of Last Workover : April 29, 1960

T.D. : 5832' PBTD: 5779' Producing Zone: A-1 & A-3 of Madison Formation

Perforations: 5456-5474 & 5492' Cumulative Production of Present Zone: 48,169 BO

67,500 BW Latest Test: Shut in and depleted

JUSTIFICATION FOR WORKOVER: To prepare for Salt Water Disposal

SUMMARY OF WORKOVER:

12-27-63 PBTD 3575' - Rigged up pulling unit and layed down 5483' of 2-3/8" tbg. Ran J.B. & G.R. on Wireline to 5300'. Ran Baker Model "K" C.I. bridge plug on Wireline and set at 5300'. Dumped one sack cmt. on top of bridge plug using dump bailer. Perforated 3595' to 3596' with 4 shots per ft. Set Baker Model "K" cmt. retainer on Wireline at 3575'. Shut in overnite.

12-28-63 PBTD 3575' - Ran 3575' of 2-7/8" tubing stung into Model "K" cmt. retainer at 3596', broke circulations outside of 5-1/2" casing with 1800# at the rate of 6 BPM. Circulated out mud and shut down overnite waiting on cement.

12-29-63 PBTD 3575' - Cemented 5-1/2" casing with 360 sacks 1 to 1 pozmix with 8% gel tailed in with 100 sacks 1 to 1 pozmix 2% gel displaced cement through Model "K" cmt. retainer at 3575' out perf. at 3596'. Full returns out surface casing while cementing. Maximum pressure 3000#. Released pressure. Back pressure valve would not hold. Circulated out under pressure. Caught cement flag. Shut in overnite.

12-30-63 PBTD 3575' - Tested cement job, would not hold. Pumping into formation with 800# at the rate of 1 BPM. Shut down overnite waiting on HOWCO pump truck to test to determine if hole will circulate and recement.

SUMMARY OF WORKOVER CONTINUED:

12-31-63 PBTD 3575' - Broke formation through perf. at 3595' with approximately 75 bbls. water, did not circulate. Pumped into formation at the rate of 5 BPM, 1800# pressure. Cemented with 150 sacks regular cement with 100# Halide #9 added. Pumped into formation at 1800#, stopped pump and pressure dropped to 1400# immediately and slowly bled to 1000# and stabilized. Shut in overnite.

1-01-64 PBTD 3575' - Tested cmt. job to 2000#, held. Wireline perforated with 4 shots per foot from 3218' to 3250'. Formation broke down at 2000#. Injected 256 bbls. water at the rate of 10 BPM and 2400 PSI. Made run with dummy gun, could not get below 3525' because of cmt. in casing. Wireline perforated with 4 shots per foot from 3462' to 3512' and 3284' to 3410'. Set packer at 3275' and broke formation down at 2000 PSI. Injected 100 bbls. water at the rate of 8 BPM and 2800 PSI. Dropped 100 RCN balls and injected 143 bbls. at the rate of 8 BPM and 2900 PSI. Dropped 25 RCN balls, injected 190 bbls. at the rate of 8 BPM and 2900 PSI. Dropped 25 RCN balls and injected 271 bbls. at the rate of 8 BPM and 2900 PSI. Reset packer and pumped into perforation 3462'-3512'. Injected a total of 120 bbls. water at the rate of 8 BPM and 3050 PSI. 7 BPM and 3000 PSI, 5 BPM and 2800 PSI, and 3 BPM and 2200 PSI. Reset packer at 3197' and injected into all perforations 50 bbls. at the rate of 9½ BPM and 2400 PSI, 100 bbls. at 7 BPM and 1900 PSI, 150 bbls. at 4½ BPM and 1500 PSI and 180 bbls at 3 BPM and 1200 PSI. Instant shut in pressure 1000 PSI. 5 min. bleed down 800 PSI. Shut well in over holidays. (Perforated with wireline through tubing gun.)

1-02-64 PBTD 3575' - Ran tubing with Larkin Neoseal Hook Wall Packer. Packer would not set. Came out of hole with tubing. Packer rubber damaged and slips were dull. Shut in overnite.

1-03-64 PBTD 3575' - Ran 93 jts. 3-1/2" Tube Cote Tubing with Baker Model "R" Packer with 2" bore. Circulated annulus with 39 bbls. of fresh water with 15 gal. of inhibator added and 2 bbls. oil on top. Set Packer at 2934'. To Drop From Report.

1-13-64 PBTD 3575' - Station started in operation January 9, 1964, with 800# pressure. Pressure dropped to 400# by Friday, January 10, 1964 Injecting at the rate of 3.7 BPM (5328 BPD) and maintaining 390# pressure. TO DROP FROM REPORT.

RECAP OF WORKOVER:

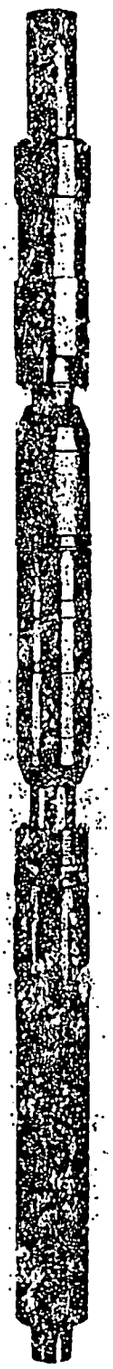
1. Final Perforations: 3218'-3250', 3462'-3512', 3284'-3410'

2. Final PBTD: 3575'

3. Geologic Name: EPU #80-D Salt Water Disposal (DAKOTA SAND)

ARROW OIL TOOLS, Inc.
P.O. Drawer 7649 / Tulsa, Oklahoma 74105 / Telephone: (918) 445-0411 / Outside Oklahoma Wats: 1-800-331-4042

non ass hole



ARROWSET I PACKER

Combines advantages of mechanically-set retrievable packer and permanent packer.

Arrow's Arrowset I Single-String Retrievable Production Packer effectively meets several zone isolation, production, and injection requirements. Full opening design gives unrestricted flow and allows wireline tools to pass. Mechanical lock-setting action holds substantial pressures from above or below without tubing weight or tension. No hydraulic anchor is required to prevent packer movement, even with high differential pressures.

Packer's ability to absorb tubing expansion or contraction forces makes the Arrowset I right for both pumping and injection wells.

After packer is set, tubing can be left in tension, compression, or neutral.

Large internal bypass reduces swabbing effect when running or retrieving. When packer is set, bypass is automatically sealed and closed.

When the Arrowset I Packer is run with the Arrow On/Off Tool, tubing can be pulled without disturbing packer.

SPECIFICATIONS — ARROWSET I PACKER

CASING		CASING I.D. RANGE		MAX. O.D. OF TOOL	PACKER BORE	THREAD SPECIFICATION BOX UP & PIN DOWN
O.D.	WEIGHT LBS./FT.	MINIMUM	MAXIMUM			
2⅞"	6.4- 6.5	2.375	2.469	2.250	.625	1.050 EU 10 Rd
4	9.5-11.0	3.406	3.548	3.250	1.500	1.900 EU 10 Rd
4½	15.1-16.6	3.719	3.844	3.562		
5	9.5-13.5	3.900	4.090	3.750	1.938	2.375 EU 8 Rd
	24.2					
	15.0-20.8	4.156	4.469	4.000		
	11.5-15.0	4.312	4.562	4.125		
5½	20.0-23.0	4.656	4.858	4.500	2.000	
	14.0-17.0	4.812	5.094	4.625		
			5.031		2.375	2.875 EU 8 Rd
6⅝	24.0-32.0	5.656	5.937	5.500	2.500	
7	38.0					
6⅝	20.0	5.969	6.219	5.812		
7	29.0-35.0					
	17.0-32.0*	6.031	6.538	5.875		
	17.0-26.0	6.219		6.000		
7⅝	45.3					
	24.0-39.0	6.625	7.031	6.453		
8⅝	40.0-49.0	7.469	7.775	7.250		
				7.312	4.000	4.500 EU 8 Rd
	28.0-40.0	7.719	8.031	7.500	2.500	2.875 EU 8 Rd
				7.531	4.000	4.500 EU 8 Rd
9⅝	43.5-53.5	8.469	8.781	8.250		
	32.3-43.5	8.719	9.031	8.500		
10¾	71.1-81.0	9.219	9.469	9.000		
	51.0-65.7	9.531	9.875	9.312		
	32.7-45.5	9.906	10.219	9.687		

*29-32# CASING REQUIRES SPECIAL PACKING ELEMENTS

To set pick up turn to Right ¼ & come down to release Find Free point turn Right ¼ turn & pick up set down 5 to 6000# & turn to right ¼ turn & torque & pull up

>>> Scaling Indices <<<

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	-1.07	-51.85	NA	NA
80.0	-0.87	-52.17	NA	NA
100.0	-0.63	-52.26	NA	NA
120.0	-0.35	-51.68	NA	NA
140.0	-0.03	-50.97	NA	NA
160.0	0.34	-49.79	NA	NA
180.0	0.75	-48.81	NA	NA
200.0	1.20	NA	NA	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

Downhole Water Analysis 12/27/1993
 Max A. Jensen

CLIENT NAME : Murphy Exploration & Production
CLIENT LOCATION: Poplar, Montana

Well Number : EPU 80D SWD Water Analysis

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	48719.4	2118.2	as NaCL	0.0
Calcium	Ca++	2002.2	99.9	as CaCO3	5000.0
Magnesium	Mg++	485.7	40.0	as CaCO3	2000.0
Barium	Ba++	0.0	0.0	as CaCO3	0.0
Strontium	Sr++	0.0	0.0	as CaCO3	0.0
Total Cations		51207.3	2258.1		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	79467.9	2241.5	as NaCL	131000.0
Sulfate	SO4=	432.8	9.0	as Na2SO4	640.0
Carbonate	CO3=	0.0	0.0	as CaCO3	0.0
Bicarb.	HCO3-	463.2	7.6	as CaCO3	380.0
Total Anions		80363.9	2258.1		

Total Solids 131571.2

METALS

Total Iron,Fe	5.0	as Fe 5.0
Acid to Phen,CO2	118.8	as CaCO3 270.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity jtu	0.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	60.0

Max A. 12/27/93

CLIENT NAME : MURPHY EXPL. & PROD. CO.
CLIENT LOCATION: POPLAR MT

Well Number : EPU 80D
Water Source : 12-13-94

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	-1.93	-96.08	NA	NA
80.0	-1.73	-96.48	NA	NA
100.0	-1.49	-96.54	NA	NA
120.0	-1.21	-95.61	NA	NA
140.0	-0.88	-94.89	NA	NA
160.0	-0.51	-93.71	NA	NA
180.0	-0.09	-92.75	NA	NA
200.0	0.37	NA	NA	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

Downhole Water Analysis 12/29/1994
Copyright 1991,1993, Nalco Chemical Company DON S. WHISONANT

CLIENT NAME : MURPHY EXPL. & PROD. CO.
CLIENT LOCATION: POPLAR MT

Well Number : EPU 80D
Water Source : 12-13-94

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	70021.0	3044.4	as NaCL	0.0
Calcium	Ca++	240.3	12.0	as CaCO3	600.0
Magnesium	Mg++	121.4	10.0	as CaCO3	500.0
Barium	Ba++	0.0	0.0	as CaCO3	0.0
Strontium	Sr++	0.0	0.0	as CaCO3	0.0
Total Cations		70382.7	3066.4		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	107979.3	3045.7	as NaCL	178000.0
Sulfate	SO4=	608.6	12.7	as Na2SO4	900.0
Carbonate	CO3=	0.0	0.0	as CaCO3	0.0
Bicarb.	HCO3-	487.6	8.0	as CaCO3	400.0
Total Anions		109075.5	3066.4		

Total Solids 179458.2

METALS

Total Iron,Fe	2.5	as Fe	2.5
Acid to Phen,CO2	77.0	as CaCO3	175.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity jtu	0.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	0.0
Temperature F	100.0

>>> Scaling Indices <<<

Downhole Water Analysis 1/5/96

 DON S. WHISONANT

CLIENT NAME : MURPHY EXPLORATION AND PRODUCTION
CLIENT LOCATION: POPLAR MT

Well Number : EPU 80D PRODUCED
Water Source : NOV 14,1995 SAMPLE

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	68787.4	2990.8	as NaCL	0.0
Calcium	Ca++	240.3	12.0	as CaCO3	600.0
Magnesium	Mg++	121.4	10.0	as CaCO3	500.0
Barium	Ba++	0.0	0.0	as CaCO3	0.0
Strontium	Sr++	0.0	0.0	as CaCO3	0.0
Total Cations		69149.1	3012.7		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	106159.4	2994.4	as NaCL	175000.0
Sulfate	SO4=	574.8	12.0	as Na2SO4	850.0
Carbonate	CO3=	0.0	0.0	as CaCO3	0.0
Bicarb.	HCO3-	390.1	6.4	as CaCO3	320.0
Total Anions		107124.3	3012.7		

Total Solids 176273.4

METALS

Total Iron,Fe	2.5	as Fe	2.5
Acid to Phen,CO2	35.2	as CaCO3	80.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.0
Turbidity jtu	0.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	50.0
Temperature F	130.0

Don S. Whisonant

>>> Scaling Indices <<<

Downhole Water Analysis 12/13/96

 Don Whisonant

CLIENT NAME : Murphy Exploration and Production
CLIENT LOCATION: Poplar, MT

Well Number : EPU 8OD produced water
Water Source : 12-13-96

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	62835.9	2732.0	as NaCL	0.0
Calcium	Ca++	268.3	13.4	as CaCO3	670.0
Magnesium	Mg++	121.4	10.0	as CaCO3	500.0
Barium	Ba++	0.0	0.0	as CaCO3	0.0
Strontium	Sr++	0.0	0.0	as CaCO3	0.0
Total Cations		63225.6	2755.4		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	97060.0	2737.7	as NaCL	160000.0
Sulfate	SO4=	541.0	11.3	as Na2SO4	800.0
Carbonate	CO3=	0.0	0.0	as CaCO3	0.0
Bicarb.	HCO3-	390.1	6.4	as CaCO3	320.0
Total Anions		97991.1	2755.4		

Total Solids 161216.7

METALS

Total Iron,Fe	2.5	as Fe	2.5
Acid to Phen,CO2	35.2	as CaCO3	80.0

OTHER PROPERTIES

pH	5.8
Specific Gravity	1.0
Turbidity jtu	0.0
Oxygen, as O2 ppm	0.0
Sulfide as H2S ppm	50.0
Temperature F	70.0

>>> Scaling Indices <<<

WATER ANALYSIS REPORT

Company : Murphy Oil Co.
Address : Poplar, Mt.
Lease : 80-D
Well : 80-D S.W.D.
Sample Pt. : Pump

Date : 12-19-97
Date Sampled : 12-18-97
Analysis No. : 2

	ANALYSIS		mg/L		* meq/L
1.	pH	7.0			
2.	H2S	Pos.			
3.	Specific Gravity	1.100			
4.	Total Dissolved Solids		140694.1		
5.	Suspended Solids		clear		
6.	Dissolved Oxygen		.5 ppm		
7.	Dissolved CO2		500		
8.	Oil In Water				
9.	Phenolphthalein Alkalinity (CaCO3)				
10.	Methyl Orange Alkalinity (CaCO3)				
11.	Bicarbonate	HCO3	195.0	HCO3	3.2
12.	Chloride	Cl	85080.0	Cl	2400.0
13.	Sulfate	SO4	900.0	SO4	18.7
14.	Calcium	Ca	4752.0	Ca	237.1
15.	Magnesium	Mg	518.1	Mg	42.6
16.	Sodium (calculated)	Na	49249.0	Na	2142.2
17.	Iron	Fe	0.1		
18.	Barium	Ba	0.0		
19.	Strontium	Sr	0.0		
20.	Total Hardness (CaCO3)		14000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

237	*Ca <----- *HCO3	3
	/------->	
43	*Mg -----> *SO4	19
	<----------/	
2142	*Na -----> *Cl	2400

Saturation Values Dist. Water 20 C

CaCO3	13 mg/L
CaSO4 * 2H2O	2090 mg/L
BaSO4	2.4 mg/L

Compound	Equiv wt	X meq/L	= mg/L
Ca(HCO3)2	81.0	3.2	259
CaSO4	68.1	18.7	1276
CaCl2	55.5	215.2	11941
Mg(HCO3)2	73.2		
MgSO4	60.2		
MgCl2	47.6	42.6	2029
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	2142.2	125190

REMARKS:

Petrolite Oilfield Chemicals Group

Respectfully submitted,
Ken Kolstad

Ken Kolstad

BAKER PETROLITE
A Baker Hughes company

SCALE TENDENCY REPORT

Company	: Murphy Oil Co.	Date	: 12-19-97
Address	: Poplar, Mt.	Date Sampled	: 12-18-97
Lease	: 80-D	Analysis No.	: 2
Well	: 80-D S.W.D.	Analyst	: Ken Kolstad
Sample Pt.	: Pump		

STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO3 Scaling Tendency

S.I. = 0.9 at 120 deg. F or 49 deg. C
S.I. = 0.9 at 140 deg. F or 60 deg. C
S.I. = 1.0 at 160 deg. F or 71 deg. C
S.I. = 1.1 at 180 deg. F or 82 deg. C
S.I. = 1.2 at 200 deg. F or 93 deg. C

****

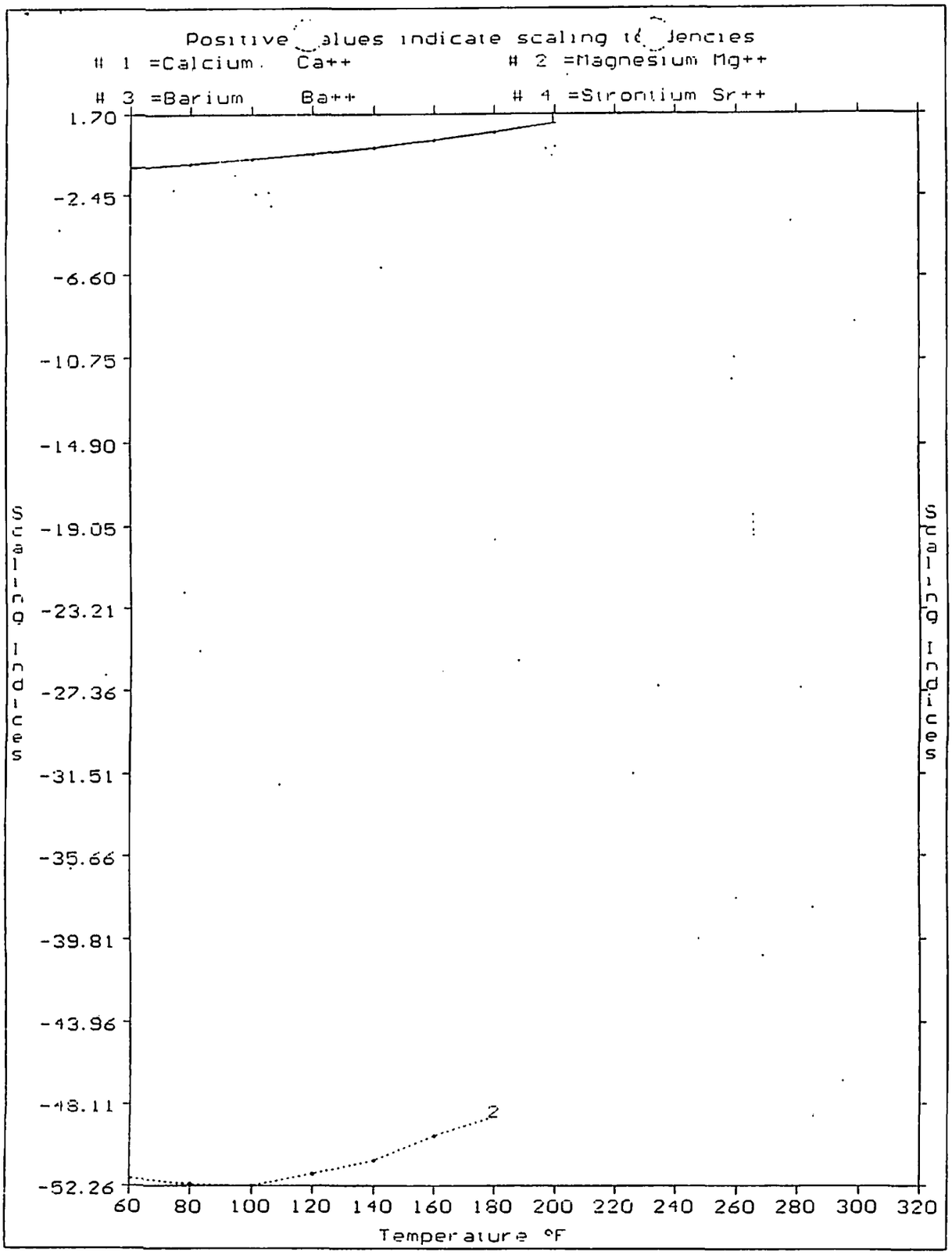
CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S = 3423 at 120 deg. F or 49 deg C
S = 3483 at 140 deg. F or 60 deg C
S = 3447 at 160 deg. F or 71 deg C
S = 3399 at 180 deg. F or 82 deg C
S = 3307 at 200 deg. F or 93 deg C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
Ken Kolstad

BAKER PETROLITE
A Baker Hughes company


Positive values indicate scaling tendencies
1 =Calcium Ca++
2 =Magnesium Mg++
3 =Barium Ba++
4 =Strontium Sr++
1.70
-2.45
-6.60
-10.75
-14.90
-19.05
-23.21
-27.36
-31.51
-35.66
-39.81
-43.96
-48.11
-52.26
Scaling Indices
Scaling Indices
2
60 80 100 120 140 160 180 200 220 240 260 280 300 320
Temperature °F

WATER ANALYSIS REPORT

Company : Murphy Oil Co.
Address : Poplar, Mt.
Lease : S.W.D.
Well : 80-D
Sample Pt. : Pump

Date : 1/5/99
Date Sampled : 1/4/99
Analysis No. : 1

	ANALYSIS		mg/L		* meq/L
1.	pH	7.2			
2.	H2S	pos.			
3.	Specific Gravity	1.075			
4.	Total Dissolved Solids		127561.5		
5.	Suspended Solids				
6.	Dissolved Oxygen		.1		
7.	Dissolved CO2		450		
8.	Oil In Water		trace		
9.	Phenolphthalein Alkalinity (CaCO3)				
10.	Methyl Orange Alkalinity (CaCO3)				
11.	Bicarbonate	HCO3	317.0	HCO3	5.2
12.	Chloride	Cl	76680.0	Cl	2163.0
13.	Sulfate	SO4	1350.0	SO4	28.1
14.	Calcium	Ca	3240.0	Ca	161.7
15.	Magnesium	Mg	980.0	Mg	80.6
16.	Sodium (calculated)	Na	44923.7	Na	1954.1
17.	Iron	Fe	0.8		
18.	Barium	Ba	0.0		
19.	Strontium	Sr	70.0		
20.	Total Hardness (CaCO3)		11000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

162	*Ca <----- *HCO3	5
	/------->	
81	*Mg -----> *SO4	28
	<---------/	
1954	*Na -----> *Cl	2163

Saturation Values Dist. Water 20 C

CaCO3	13 mg/L
CaSO4 * 2H2O	2090 mg/L
BaSO4	2.4 mg/L

Compound	Equiv wt	X meq/L	= mg/
Ca(HCO3)2	81.0	5.2	421
CaSO4	68.1	28.1	1913
CaCl2	55.5	128.4	7123
Mg(HCO3)2	73.2		
MgSO4	60.2		
MgCl2	47.6	80.6	3838
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	1954.1	114195

Baker Petrolite Chemicals Group

Respectfully submitted,
Tom Willer
Tom Willer

BAKER PETROLITE
A Baker Hughes company

(Deg. F)	Carbon...	Sulfate	Sulfate	S...ate
60.0	-1.97	-92.38	NA	NA
80.0	-1.78	-92.75	NA	NA
100.0	-1.54	-92.80	NA	NA
120.0	-1.25	-91.88	NA	NA
140.0	-0.92	-91.22	NA	NA
160.0	-0.55	-90.13	NA	NA
180.0	-0.13	-89.24	NA	NA
200.0	0.33	NA	NA	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60.0	-2.06	-89.18	NA	NA
80.0	-1.86	-89.54	NA	NA
100.0	-1.62	-89.62	NA	NA
120.0	-1.34	-88.80	NA	NA
140.0	-1.01	-88.08	NA	NA
160.0	-0.64	-86.89	NA	NA
180.0	-0.23	-85.92	NA	NA
200.0	0.23	NA	NA	NA
220.0	NA	NA	NA	NA
240.0	NA	NA	NA	NA
260.0	NA	NA	NA	NA
280.0	NA	NA	NA	NA
300.0	NA	NA	NA	NA
320.0	NA	NA	NA	NA

Positive values indicate scaling tendencies

BUD'S TANK CO.
GOOD TANK SPECIALISTS
MIDLAND

QUOTATION 219

BUD'S TANK COMPANY

683-3612 MIDLAND, TEXAS 79701 BOX 1108

Date NOVEMBER 28, 1969

QUIRY: VERBAL

DELIVERY: TWO (2) WEEKS

MURPHY OIL CORPORATION
P.O. BOX 547
POPLAR, MONTANA

TERMS: NET 30 DAYS

TENTION: MR. M.T. JAMES

REPLY TO: BUD MC SPADDEN
MIDLAND, TEXAS
915-563-1514

We are pleased to quote as follows:

EM	QUAN.		PRICE
	1	L-500 BBL 20' X 10' USED OPEN TOP REDWOOD TANK COMPLETE WITH THE FOLLOWING COMPONENTS: A.) COARSE SUNDECK WITH SUPPORTS (SINGLE COARSE) B.) ALL FLANGES NECESSARY FOR YOUR OPERATIONS C.) 3" THICK STAVES D.) 2" THICK BOTTOM ALL THE ABOVE EQUIPMENT DELIVERED AND ERRECTED ON YOUR PREPARED LOCATION NET SELLING PRICE.....	$ 3,500.00

NOTE:
FOR A DOUBLE HEADED TANK ADD $ 350.00

Yours very truly

BUD'S TANK COMPANY

Bud Mc Spadden

BUD MC SPADDEN

GUARANTEE

ud's Tank Company guarantees its products against defective workmanship and material for one year from date of invoice, and when owned by riginal purchaser. Any article not manufactured by the Bud's Tank Company which is included in any proposal is sold under such warranties only e makers give us and we are able to enforce. Our liability for damages caused by defective workmanship or material shall be limited to repairing or cing the defective part or parts, and no allowance will be granted for repairs or alterations made by the purchaser without the seller's written nt. Bud's Tank Company shall not be liable for indirect or consequential damages of any nature or due to any cause.

WELL TRE[redacted]REPORT

DOWELL

DWL-494-L PRINTED IN U.S.A.

DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

WELL NAME AND NUMBER: EPU 80 D	LOCATION: Poplar	CUSTOMER REPRESENTATIVE: Mr. Huff	DATE: 10-28-75
POOL:	FORMATION: Dakota	JOB DONE DOWN: TUBING ☒ CASING ☐ ANNULUS ☐	TREATMENT NUMBER:
COUNTY: Roosevelt	STATE: Montana	TYPE OF WELL: OIL ☐ GAS ☐ WATER ☐ INJ. ☒	ALLOWABLE PRESSURE: TBG: CSG:
TYPE OF SERVICE: ☒ Acidizing ☐ Fracturing ☐ Sand Control ☐ Other	SERVICE NAME: Acid	AGE OF WELL: NEW WELL ☐ REWORK ☒	TOTAL DEPTH: 3512 / STATIC BHT.

CUST. NAME: Murphy Oil Co

ADDRESS: Box 547

CITY, STATE ZIP CODE: Poplar, Montana 59255

REMARKS:

FOR CONVERSION PURPOSES 24 BBLS EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 09:00 LEFT LOCATION:

CASING SIZE	CASING DEPTH	TUBING SIZE	TUBING DEPTH
5 1/2	3512	2 7/8	3210
LINER SIZE	LINER TOP-BOTTOM	PACKER TYPE	PACKER DEPTH
OPEN HOLE	CASING VOL.	TUBING VOL.	ANNULAR VOL.
		18.7	

PERFORATED INTERVALS

TOP	TO	BOTTOM	NO. OF HOLES	TOP	TO	BOTTOM	NO. OF HOLES
	TO				TO		
	TO				TO		
	TO				TO		
	TO				TO		

DIAMETER OF PERFORATIONS =

TIME	LIQUID RATE BPM	TYPE OF FLUID	STAGE VOL. BBLS.	CUM. VOL. BBLS.	PROP TYPE	PROP #/GAL	PRESSURE CSG.	PRESSURE TBG.	NOTATIONS
									Pre-Job Pressure Test
									Rig up - Safety Meeting
1:25									wait on water
1:32	1 3/4	Acid	12						start Acid via tbg
1:34	2 1/2	Salt Water						400	start Salt Water Flush
1:40	2 1/2	salt Water	24	36					increase rate
								700	stop Pump - Job Complete
								600	ISIP
								400	5 min

GRADIENT | AVG. INJECTION RATES: LIQ. 2 1/2 W/DROP | TOTAL FLUID: 36 BBLS. | TOTAL PROP: LBS.

TREATING PRESSURE SUMMARY: 700 | FINAL 700 | AVG. 600 | IMMED. SIP 600 | 5 MIN. SIP 400

PREVIOUS TREATMENTS AND DATES

INJECTION PRIOR TO THIS TR. ☐ Test ☐ Stabilized

DOWELL LOCATION: Williston, N.D.

OTHER MATERIALS INJECTED

TYPE	PURPOSE	AMOUNT
15%	HCL	500 gal
A-170	Inhibitor	4 gal
W 35	Non-Emulsifier	2 gal
D 41	Iron Sequestering Agent	20 #

DOWELL TREATMENT SUPERVISOR: K M Johnson

STIMULATION TREATMENT REPOR

DWL-404-J PRINTED IN U.S.A.

DOWELL

A WELL DIVISION OF THE DOW CHEMICAL COMP

DATE: 10-2-73

WELL NAME AND NUMBER: 80-D	LOCATION:	CUSTOMER REPRESENTATIVE: MR. OBrian	TREATMENT NUMBER: 15-05-7615
POOL: EPY	FORMATION:	JOB DONE DOWN — TUBING A ☒ / CASING D ☐ / ANNULUS C ☐	ALLOWABLE PRESSURE — TBG: / CSG:
COUNTY: Roosevelt	STATE: Mont	TYPE OF WELL — OIL A ☐ / GAS B ☐ / WATER C ☐ / INJ. ☒	
TYPE OF SERVICE:		AGE OF WELL — NEW WELL A ☐ / REWORK B ☒	TOTAL DEPTH / CIRC. BHT.
CASING SIZE	CASING DEPTH	TUBING SIZE	TUBING DEPTH
LINER SIZE	LINER DEPTH	PACKER TYPE	PACKER DEPTH
OPEN HOLE	CSG. OR ANRL. VOL.	TBG VOLUME	STATIC BHT.

CUST. NAME: Murphy Corp

ADDRESS:

CITY, STATE & ZIP CODE:

REMARKS:

PERFORATED INTERVALS

DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES

FOR CONVERSION PURPOSES 24 BBLS EQUALS 1000 GALLONS

ARRIVED ON LOCATION:

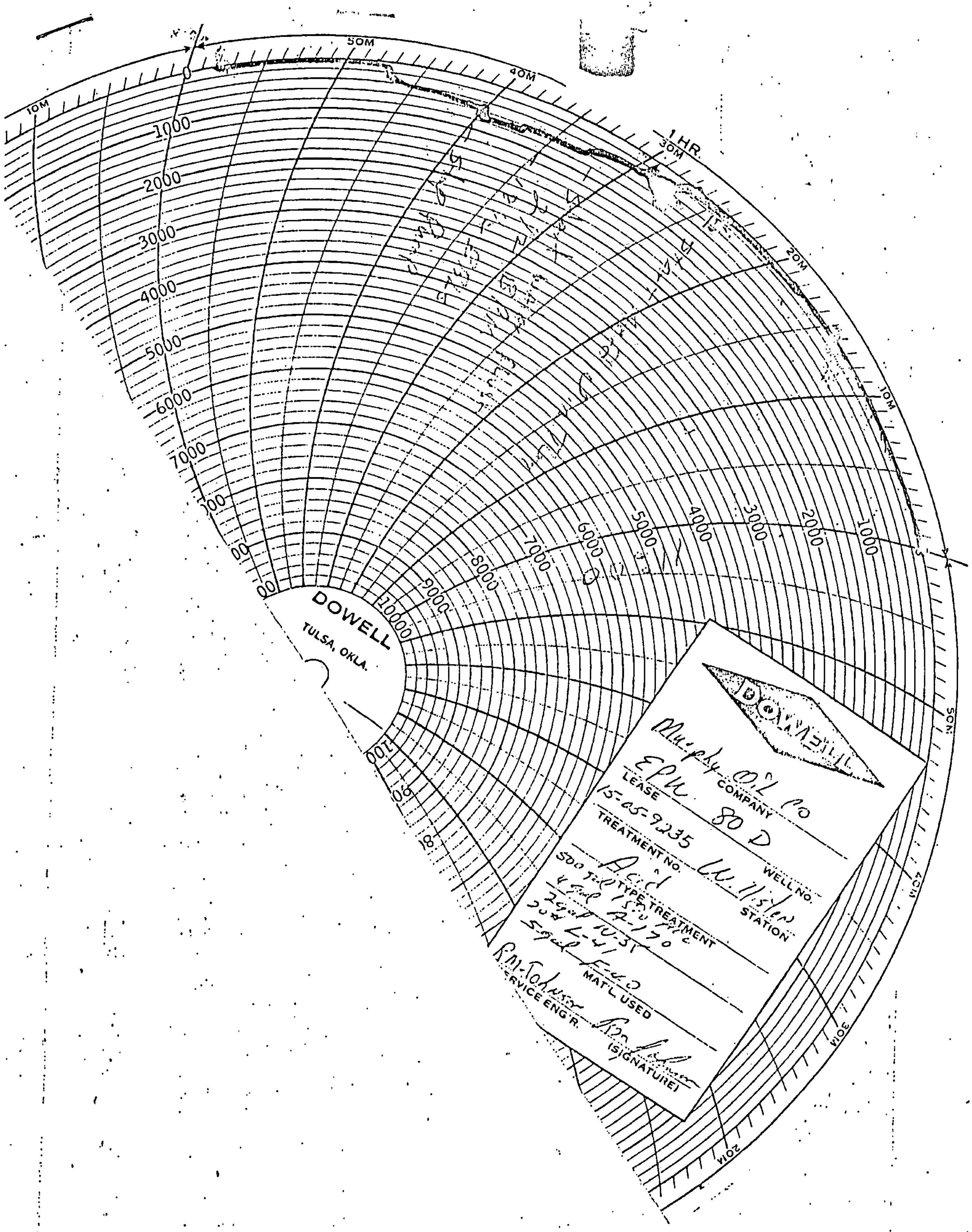
TIME	INJECTION RATE	INJECTION BBLS IN	PRESSURE CSG.	PRESSURE TBG.	SERVICE LOG
					Rig Pump to Well Saftey Meeting
11:50	2		-	200	Start 40 BBL Fresh water
2:10	2	40	-	400	40 BBL pumped Start 40 BBL acid
2:30	2	80		400	80 BBL pumped start 15 BBL fresh water
2:38	2	95		400	95 BBL pumped shut down Tie inj Pump to well

MAX RAE 2 MAX PSI 800
min " 2 min 200
AUG " 2 AUG 300
Total load 95 BBL

TIME AT LOCATION	AVG. LIQUID INJ. RATE	ADJUST RATE (SOLIDS INCL)	TOTAL FLUID PUMPED — OIL / WATER
MAX. PRESS.	AVG. PRESSURE	FINAL PUMP IN PRESSURE	SHUT IN PRESSURE — IMMEDIATE / 15 MINUTES
DOWELL LOCA	DOWELL ENGINEER		
TE	STOMER REP. CONTACTED	CUSTOMER CONSIDERED SERVICE ☐ SATISFACTORY ☐ UNSATISFACTORY ☐ UNKNOWN	PROD. BEFORE TREATMENT ☐ TEST ☐ ALLOWABLE — PROD. AFTER TREATMENT ☐ DAYS ☐ TEST ☐ ALLOWABLE

PROPS AND LIQUIDS INJECTED

TYPE	SIZE OR PURPOSE	AMOUNT


DOWELL
TULSA, OKLA.
1 HR.
50M
40M
30M
20M
10M
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
COMPANY
LEASE
WELL NO.
TREATMENT NO.
STATION
TYPE TREATMENT
MAT'L USED
SERVICE ENG'R.
(SIGNATURE)

GEARHART INDUSTRIES, INC.
WIRELINE SERVICES
P.O. Box 1258 / Fort Worth, Texas 76101

Legal Description		ID #	
Sec. 3	Bill to: Murphy Oil Corp	Job Ticket	306446
28N	Address:	Invoice #.	
51E	City ___ State ___ Zip ___	Cust. Order #	
	Lease and Well No. EPU 80 D	Date of service	9/13
	Field EPU County Roosevelt	Schedule zone	
	Job No. 6076 State Mont	District	Williston
		R&S Code	29 05

TO GEARHART INDUSTRIES, INC.
You are hereby requested to furnish the service and materials and equipment herein set forth. Unless there is presently in effect a master or other specific or general contract intended to extend and apply to such service, materials and equipment (in which case such master, specific or general contract shall apply in accordance with its terms), these will be supplied in accordance with your General Terms and Conditions as set out on the back of this form. It is understood that certain of these, including (but not limited to) Chemical Cutters and Radioactive Materials, are potentially dangerous to persons, animals and property and accordingly the said General Terms and Conditions contain certain DISCLAIMERS OF LIABILITY and INDEMNITIES. It is expressly accepted and agreed that (unless there is in effect a master or other specific or general contract as aforesaid) the said General Terms and Conditions shall supersede and replace any and all terms of any other contract or arragement which may otherwise apply or be deemed to apply to the furnishing of the service, materials and equipment to the extent that any such term modifies, conflicts with, contradicts or is added to any term of this form or the said General Terms and Conditions.

Name of Customer ______________ X [signature] Signature of Customer or Authorized Agent (also required on reverse)

INSTRUMENT PROTECTION: ☐ NOT OFFERED ☐ Accepted ☐ Not Accepted Signature of Customer/Agent: X

Service Code	Description	S/N	Depth or Quantity	Rate	Amount
1000-001	Service Charge				n/c
1000-1901	Mast Truck				n/c
					n/c
1700-003	Pressure Control				~~300.00~~
1430-010	Run RA Tracer				
	Depth		3460	.26	899.60
	Oper.		min		360.00
					1259.60
					~~1559.60~~
	Instrument Protection:				
	List Third Party/Other Charges Below				

Well Data

Perm. Datum GL Elev. 2059
Log from: ______ to: ______
Depth: Driller 3500 Logger 3460
Size: Casing 5½ @ ______ Bit ______
Borehole fluid: Type ______ pH ______
Density ______ Viscosity ______
Fluid loss ______ Sample source ______
BHT ______ Rm @ temp ______
RMF @ temp ______ Rmc @ temp ______
Other:

	Date	Time	ET
Report/rel.	9-13	5:30	
Arrive Loc.		9:00	3.5
Rig-up		9:00	1
Oper. RA - DTL		Begin: 10:00	1.0
Run #: 1	9-13	End: 13:30	3.5
Oper.		Begin:	
Run #:		End:	
Rig down:		Time: 13:30	
Depart:		Time: 1500	1.5
Shop/Loc:		Time: 1700	2

Received by customer: Field prints ( ) Film ( ) Tape ( ) Other ( )
Signature of Customer/Agent: X
Third Party Charges: ______ Review
Invoice #'s ______ Cr
Remarks: ______ Pr
Dt

Gearhart Engineer: [signature]
I Acknowledge Completion of the Foregoing Job:
X [signature]
Signature of Customer/Agent

CUSTOMERS COPY

FRACTURING SERVICE TREATING REPORT

HALLIBURTON COMPANY

Attach To Ticket No. FS-143934

Halliburton District Olendive — Stage No. 1

Halliburton Division Denver — Page No. 1

Field East Poplar — Sec. — Twp. — Rng. — County Roosevelt — State Montana

Company Murphy Corp. — Lease E P U — Well No. 80-D — Date 12-31-63

THE FOLLOWING INFORMATION WAS FURNISHED BY THE WELL OWNER OR HIS AGENT:

Date Completed 1956 — Formation Dakota

Casing: OD 5½ — Wt. 15.50 — Depth 3535

Liner: OD XXX — From — To

Perf.: From 3218 — To 3250 — Shots/Ft. 4

Perf.: From 3284 — To 3410 — Shots/Ft. 4

Perf.: From 3462 — To 3512 — Shots/Ft. 4

Open Hole: Size — From — To

Prev. Treat: Date — Type

Fluid: Gal. — Sand: Lb.

Pres. Treat: Interval: From 3218 — To 3512

Tubing: Size 2 7/8" — Depth

Packer: Type RTTS — Set at

Max. Allowable Pres.: PSI: Tubing 5000 — Casing 1500

Treat Thru: Tubing ☒ Annulus ☐ Casing ☐ Tubing/Annulus ☐

MATERIALS USED

Type Job Pump Water for Disposal Test

Fluid Water

Fluid Source Madison formation

API Gravity — °Viscosity — CPS @ — °F

Sand: Grade — Lb. — Sack ☐ Bulk ☐

Sand: Grade — Lb. — Sack ☐ Bulk ☐

Surfactant: Type — Gal. — in Bbl. Gal.

Acid: Type — Gal. — %

Fluid Loss Add.: Type — Gal. Lb.

Perfpac Balls: Type 7/8" RCN — No. 150

Blocking Agent: Type — Gal. Lb.

Gelling Agent: Type — Gal. Lb.

Breaker: Type — Gal. Lb.

TREATMENT SUMMARY

Trucks (No. and Type) 1 58-C

Hyd. HP Available 550 — Used 500

Pumps On Tubing 2 — Casing 0

AVERAGE RATES--BPM

Treating — Displ. — Overall

PRESSURES—PSI

Breakdown — Maximum 3050

Minimum 1200 — Displacement

Instant Shut-In 1000 — 5 Min. 800

VOLUMES:

Load: Bbl. Gal. — Breakdown: Bbl. Gal.

Treatment: Bbl. XXX 778 — Displ.: Bbl. Gal.

Total: Bbl. XXX 778

TREATING LOG

TIME	Operation or Amt. and Type Fluid Pumped	RATE	PUMPS	PRESSURE—PSI TUBING	PRESSURE—PSI CASING	REMARKS
6:25	Test Lines		2	6000		
6:30	Pressure Annulus		1		1500	
10:00	Pump into perfs @ 3218 - 3250	10	2	2400		10,770 gal.
11:00	Set packer@ 3265, ch. squeeze					
	set packer @ 3275					
3:33	Pump into perfs @ 3284-3415 and inject	8	2	2800		4,200 gal.
	100 RCN Balls	8	2	2900		6,000 gal.
	inject 25 RCN Balls	8	2	2900		8,000 gal.
	inject 25 RCN Balls	8	2	2900		11,400 gal.
	Set packer @ 3437					
4:37	Pump into perfs @ 3462-3512	8	2	3050		2,100 gal.
	" " " " "	7	2	3000		
"	" " " " "	5	2	2800		
	" " " " "	3	1	2200		2,950 gal.
5:05	Pump into perfs @ 3218-3512	9½	2	2400	1000	2,100 gal.
	" " " " "	7	2	1900		4,200 gal.
	" " " " "	4½	2	1500		6,300 gal.
5:30	" " " " "	3	1	1200		7,550 gal.

FORM 1387 R2

Halliburton Operator Bergner - McLean — Company Representative Wm. Brown

Copies Requested 3

ORIGINAL MUST ACCOMPANY TICKET

HALLIBURTON
SERVICES
A Division of Halliburton Company
DUNCAN, OKLAHOMA 73533

FORM 1908 R-2

WORK ORDER CONTRACT AND PRE-TREATMENT DATA

ATTACH TO INVOICE & TICKET NO. 074164

DISTRICT Cleadive DATE 2-25-77

HALLIBURTON SERVICES YOU ARE HEREBY REQUESTED TO FURNISH EQUIPMENT AND SERVICEMEN TO DELIVER AND OPERATE THE SAME AS AN INDEPENDENT CONTRACTOR TO: Murphy Corp. (CUSTOMER) AND DELIVER AND SELL PRODUCTS, SUPPLIES, AND MATERIALS FOR THE PURPOSE OF SERVICING

WELL NO. #33-D LEASE E.P.U. SEC. 3 TWP. 29N RANGE 57E

FIELD East Poplar Unit COUNTY Roosevelt STATE Mont. OWNED BY SAME

THE FOLLOWING INFORMATION WAS FURNISHED BY THE CUSTOMER OR HIS AGENT

FORMATION NAME _____ TYPE _____

FORMATION THICKNESS _____ FROM _____ TO _____

PACKER: TYPE _____ SET AT _____

TOTAL DEPTH _____ MUD WEIGHT _____

ORIG. HOLE _____

INITIAL PROD: OIL _____ BPD, H_2O _____ BPD, GAS _____ MCF

PRESENT PROD: OIL _____ BPD, H_2O _____ BPD, GAS _____ MCF

	NEW USED	WEIGHT	SIZE	FROM	TO	MAX. ALLOW. P.S.I.
CASING	U	15.50	5½	GL	4500	
LINER						
TUBING	U	6.4	2⅞	GL	3300	
OPEN HOLE						SHOTS/FT.
PERFORATIONS				3218	3512	
PERFORATIONS						
PERFORATIONS						

PREVIOUS TREATMENT: DATE _____ TYPE _____ MATERIALS _____

TREATMENT INSTRUCTIONS: TREAT THRU TUBING ☑ ANNULUS ☐ CASING ☐ TUBING/ANNULUS ☐ HYDRAULIC HORSEPOWER ORDERED _____

Acidize Perfs. with 2000 gal 15% Reg.

CUSTOMER OR HIS AGENT STATES THE WELL IS IN PROPER CONDITION TO RECEIVE THE PRODUCTS, SUPPLIES, MATERIALS, AND SERVICES

THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED

In consideration, the above-named Customer agrees:

To pay Halliburton in accord with the rates and terms stated in Halliburton's current price lists.

Halliburton shall not be responsible for and Customer shall secure Halliburton against any liability for damage to property of Customer and of the well owner (if different from Customer), unless caused by the willful misconduct or gross negligence of Halliburton, this provision applying to but not limited to subsurface damage and surface damage arising from subsurface damage.

Customer shall be responsible for and secure Halliburton against any liability for reservoir loss or damage, or property damage resulting from subsurface pressure, blowing control of the well and/or a well blowout, unless such loss or damage is caused by the willful misconduct or gross negligence of Halliburton.

Customer shall be responsible for and secure Halliburton against any and all liability of whatsoever nature for damages as a result of subsurface trespass, or, an action in the nature thereof, arising from a service operation performed by Halliburton hereunder.

Customer shall be responsible for and secure Halliburton against any liability for injury to or death of persons, other than employees of Halliburton, or damage to property (including, but not limited to, injury to the well), or any damages whatsoever, irrespective of cause, growing out of or in any way connected with the use of radioactive material in the well hole, unless such damage shall be caused by the willful misconduct or gross negligence of Halliburton.

Halliburton makes no guarantee of the effectiveness of the products, supplies or materials, nor of the results of any treatment or service.

Customer shall, at its risk and expense, attempt to recover any Halliburton equipment, tools or instruments which are lost in the well and if such equipment, tools or instruments are not recovered, Customer shall pay Halliburton its replacement cost unless such loss is due to the sole negligence of Halliburton. If Halliburton equipment, tools or instruments are damaged in the well, Customer shall pay Halliburton the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of Halliburton. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any of Halliburton's equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of Halliburton.

Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, Halliburton is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by Halliburton. Halliburton personnel will use their best efforts in gathering such information and their best judgment in interpreting it, but Customer agrees that Halliburton shall not be responsible for any damages arising from the use of such information except where due to Halliburton's gross negligence or willful misconduct in the preparation or furnishing of it.

Halliburton warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. Halliburton's liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to Halliburton or, at Halliburton's option, to the allowance to the Customer of credit for the cost of such items. In no event shall Halliburton be liable for special, incidental, indirect, punitive or consequential damages.

If on Customer's default in the payment of Customer's account 60 days after date of invoice, such account will thereafter be subject to interest until paid. In the event it becomes necessary to employ an attorney to enforce collection of such account, Customer agrees to pay all collection costs and attorney fees in the amount of 20 per cent of the amount of the unpaid account.

Halliburton shall not be bound by any changes or modifications in this contract, except where such change or modification is made in writing by a duly authorized executive officer of Halliburton.

I HAVE READ AND UNDERSTAND THIS CONTRACT AND REPRESENT THAT I AM AUTHORIZED TO SIGN THE SAME AS CUSTOMER'S AGENT

SIGNED Harold Hamilton
CUSTOMER

DATE 2-25-77

TIME 12:30 A.M. P.M.

It is hereby that the Fair Labor Standards Act of 1938, as amended, has been complied with in the production of goods and/or with respect to services furnished under this contract.

CUSTOMER

ALLIBURTON SERVICES
JOB SUMMARY

HALLIBURTON DIVISION: Denver
HALLIBURTON LOCATION: Tioga
BILLED ON TICKET NO. 0741164

WELL DATA

East Poplar Unit SEC. 3 TWP. 29N RNG. 51E COUNTY Roosevelt STATE Mont

ATION NAME ____ TYPE ____
ATION THICKNESS ____ FROM ____ TO ____
L PROD: OIL ____ BPD. WATER ____ BPD. GAS ____ MCFD
INT PROD: OIL ____ BPD. WATER ____ BPD. GAS ____ MCFD
LETION DATE ____ MUD TYPE ____ MUD WT. ____
ER TYPE ____ SET AT ____
M HOLE TEMP. ____ PRESSURE ____
DATA ____

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWABLE
CASING	U	5½	GL	4500	15.50	
LINER						
TUBING	U	2⅞	GL	2200	6.4	
OPEN HOLE					TOTAL DEPTH:	
PERFORATIONS			2218	2512		SHOTS/FT.
PERFORATIONS						SHOTS/FT.
PERFORATIONS						SHOTS/FT.

JOB DATA

CALLED OUT	ON LOCATION	JOB STARTED	JOB COMPLETED
DATE 2-25	DATE 2-25	DATE 2-25	DATE 2-25
TIME 1200	TIME 12 45	TIME 1300	TIME 1500.

TOOLS AND ACCESSORIES

TYPE AND SIZE	QTY.	MAKE
COLLAR		
SHOE		
SHOE		
ALIZERS		
M PLUG		
UG		
Swedge 4"	1	Halco
R		

PERSONNEL AND SERVICE UNITS

NAME	UNIT NO. & TYPE	LOCATION
D. Nelson	0086	
L. Tando	3444	Tioga
R. Hiendel		
	9821	Tioga

MATERIALS

FLUID ____ DENSITY ____ LB/GAL.°API
FLUID ____ DENSITY ____ LB/GAL.°API
TYPE ____ SIZE ____ LB.
TYPE ____ SIZE ____ LB.
TYPE Reg GAL. 2000 % ~~[illegible]~~ 28
TYPE ____ GAL. ____ %
TYPE ____ GAL. ____ %
TANT TYPE ____ GAL. ____ IN ____
NT TYPE 3N GAL. 10 IN 2000
LOSS ADD. TYPE ____ GAL.-LB. ____ IN ____
AGENT TYPE ____ GAL.-LB. ____ IN ____
RED. AGENT TYPE ____ GAL.-LB. ____ IN ____
ER TYPE ____ GAL.-LB. ____ IN ____
NG AGENT TYPE ____ GAL.-LB. ____
BALLS TYPE ____ QTY. ____
Inh Hai-50 - 20 gal IN 2000 gal

DEPARTMENT Stimulation
DESCRIPTION OF JOB Acidize P.B. with 2000 gal 28% Reg.

JOB DONE THRU: TUBING ☑ CASING ☐ ANNULUS ☐ TBG./ANN. ☐

CUSTOMER REPRESENTATIVE X Gerald Hagadone

HALLIBURTON OPERATOR D. Nelson COPIES REQUESTED ____

CEMENT DATA

NUMBER OF SACKS	TYPE	API CLASS	BRAND	BULK SACKED	ADDITIVES	YIELD CU.FT./SK.	MIXED LBS./GAL.

SUMMARY

PRESSURES IN PSI

TING ____ DISPLACEMENT ____
OWN ____ MAXIMUM ____
____ FRACTURE GRADIENT ____
INSTANT ____ 5-MIN. ____ 15-MIN. ____

HYDRAULIC HORSEPOWER

AVAILABLE ____ USED ____

AVERAGE RATES IN BPM

____ DISPL. ____ OVERALL ____

CEMENT LEFT IN PIPE

____ REASON ____

VOLUMES

PREFLUSH: BBL.-GAL. ____ TYPE ____
LOAD & BKDN: BBL.-GAL. ____ PAD: BBL.-GAL. ____
TREATMENT: BBL. ~~GAL.~~ 48 DISPL: BBL. ~~GAL.~~ 48
CEMENT SLURRY: BBL.-GAL. ____
TOTAL VOLUME: BBL. ~~GAL.~~ 96 ~~[illegible]~~ BBls.

REMARKS

CUSTOMER

CUSTOMER: Murphy Oil Co.
LEASE: E.P.U.
WELL NO. #63-D
JOB TYPE: Acidize P.B.
DATE: 2-25-77

HALLIBURTON SERVICES

JOB LOG

TICKET NO. 024164

CU. MER Murphy Corp. PAGE NO. 1

JOB TYPE Additional Formation DATE 2-25-77

FORM 2013 R-1

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
1	1312	.3		1		300		Start Acid
1	1322	.3	24	1		550		Start Flush
	1328		~~23~~ 24	1		550		Acid on formation
	1325		36	1		600		Acid Out Formation Let Soak
	1401		~~41~~	1		200		Start pumping Rest of Acid out
	1409		47	1		375		~~Start Acid~~, Acid out
	1416		48	1		375		Start Acid and Ball off
	1415		72	1		350		Start Flush
	1430		84	1		400		Acid Formation Let Soak
	1452			1		200		Start pumping Rest of Acid
	1456		95	1		375		Acid out
	1457		96	1		375		Over Flush 1 BBL
						200		Instant Shut In
								Job Complete
								Thank
								You!
								Dale
								Lytle

CUSTOMER

HALLIBURTON SERVICES

PACKING LIST MT 80831

SOLD TO [redacted]

SHIP TO
[illegible] Oil
Attn: [illegible],
[illegible]
[illegible], [illegible] [illegible]

CUSTOMER'S ORDER NUMBER	
CUSTOMER'S REF.	[illegible]

DATE OF REQUISITION	DATE REQUIRED AT DESTINATION	INVOICE DATE	SHIP VIA
1-5-89			[illegible]

CHARGE TO		CREDIT
37742-67280		[illegible] 80-D 1½" 580⁰⁰ ea

ITEM NO	ORDERED QTY.	SHIPPED QTY.	HALLIBURTON NUMBER	ARTICLES AND DESCRIPTION	ZARB
				Estimated Ship Date: 1-10-89	
1.	4	[illegible]	391.4[illegible]75	Calibration of a measurement system consisting of: 1-1.5" Turbine Flow Meter, stainless steel, with 1.5" [illegible] connector and quick change internals. Serial # 1.5S[illegible]-3402[illegible] [illegible] 516.07 [illegible]7721 [illegible] [illegible]7724 [illegible] [illegible] 527.41 1-Model [illegible] Magnetic Pickup 1-Model [illegible] Flow Analyzer, [illegible], with [illegible] [illegible] [illegible] Serial # 129641 129642 129643 129644	

4 Q 17 [illegible] 1-17-89

FILLED BY	RECEIVED BY	DATE RECEIVED	DATE SHIPPED	ENTERED STORES LEDGER

BOXES [illegible] BAGS ______ CRATES ______ CARTONS ______ [illegible]
SIGNATURE

HALLIBURTON LOGGING SERVICES, INC.

A Halliburton Company

Houston, Texas 77242-2800

SERVICE TICKET

L 58620-1

Cust. ID

Service Location: Williston

Well No. & Farm	County	State	Within: City/Offshore Block	Date
EPU #80D	Roosevelt	Mt.	N/A	3-21-91

Charge To	Owner	Contractor	Assisting Location	
Murphy Oil Corp.	Same	N/A	N/A	
Address	Cust. Order No.	Referral Loc.	Well Type	Well Category
		N/A	03	
City, State, Zip		Type and Purpose of Job	Price Schedule	
		622	Continental US Land	

Max. Serv. Depth	Casing Depth	Tubing Size	Casing Size
3320	N/A	2.875	5.5
Drill Bit Size	**Gun Size**	**Truck/Skid No.**	**Truck/Skid Type**
N/A	1.11/16"	6058	DDL 1
Mud Weight	**Mud Type**	**Well Pressure**	**Bottom Hole Temp.**
WR	WR	500#	115°F

Code	API Code	Hole Type
0		Cased

We certify that the Fair Labor Standards Act of 1938, as ammended, has been complied with in the production of goods and/or with respect to services furnished covered by this invoice.

PAYMENT TERMS: Invoice payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account. See Work Order Contract for additional Terms and Conditions.

Previous Ticket: L

Price Reference	Secondary Reference	Assist LOC	Description	Depth From	Depth To	Units Qty	Units Meas.	Unit Price	Amount
750500			Service						865 —
750810			Mast truck						525 —
751110			Pressure Control						1400 —
756210			Temperature Survey	Surf.	3320	3320	ft.	.40	1328
756211			Temperature Survey	3320	3100	220	ft.	N/C	800
756300			R/A Tracer log	Surf.	3320	3320	ft.	.34	1128 80
756301			R/A Tracer log	3320	3100	220	ft.	N/C	680
756520			R/A Tracer Material						125. 00

THIS IS NOT AN INVOICE

Received by Customer: Field Prints ( ) Film ( ) Tape ( )

Book Price

Miscellaneous Information

Sub Total 3100. 80

Applicable Taxes Will Be Added On Invoice

Paul Bartholomew
Engineer/Operator No. 1 Emp. # %

Engineer/Operator No. 2 Emp. # %

Mr. Jerry Hagadone
Customer or His Agent (Please Print)

The Above Job Was Satisfactorily Performed — Ray Reede
Customer or His Agent (Signature)

District Manager

FORM HLS 7125

CUSTOMER

HALLIBURTON LOGGING SERVICES, INC.

A Halliburton Company

Houston, Texas 77242-2800

SERVICE TICKET

L 14213-1

Cust. ID

Service Location: Williston

Well No. & Farm	County	State	Within: City/Offshore Block	Date
EPU #80D	Roosevelt	Mt.	N/A	8-8-91

Charge To	Owner	Contractor	Assisting Location	
Murphy Oil Corporation	Same	N/A	N/A	
Address	Cust. Order No.	Referral Loc.	Well Type	Well Category
		N/A	11	OZ
City, State, Zip		Type and Purpose of Job	Price Schedule	
		622	Continental US Land	

Max. Serv. Depth	Casing Depth	Tubing Size	Casing Size
	5000	2.875	5.5
Drill Bit Size	**Gun Size**	**Truck/Skid No.**	**Truck/Skid Type**
7.87	1.6	6058	DDL
Mud Weight	**Mud Type**	**Well Pressure**	**Bottom Hole Temp.**
N/A	WR	450#	127°F
Code	**API Code**	**Hole Type**	
		Cased	

We certify that the Fair Labor Standards Act of 1938, as ammended, has been complied with in the production of goods and/or with respect to services furnished covered by this invoice.

PAYMENT TERMS: Invoice payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account. See Work Order Contract for additional Terms and Conditions.

Previous Ticket: L

Price Reference	Secondary Reference	Assist LOC	Description	Depth From	Depth To	Units Qty	Units Meas.	Unit Price	Amount
750500			Service charge						865 -
751100			Pack off						200 -
756210			Temperature Survey	Surf.			ft.	.16	
756211			Temperature Operations				ft.	MIN	320 -
756320			Fluid travel log	Surf.			~~ft~~	.34	
756321			Fluid travel log Operation				ft	Min	500 -

INVOICE

Received by Customer: Field Prints ( ) Film ( ) Tape ( )

Book Price

Less discount

Miscellaneous Information

Sub Total 1950 —

Applicable Taxes Will Be Added On Invoice

Paul Bartholomew
Engineer/Operator No. 1 Emp. # %

Ray Reede
Customer or His Agent (Please Print)

Engineer/Operator No. 2 Emp. # %

The Above Job Was Satisfactorily Performed

Customer or His Agent (Signature)

District Manager

FORM HLS 7125

CUSTOMER

HALLIBURTON LOGGING SERVICES, INC.

A Halliburton Company

Houston, Texas 77242-2800

SERVICE TICKET

L 79208-8

Cust. ID / Service Location: Williston ND					
Well No. & Farm: EPA #80 D	County: Roosevelt	State: MT	Within: City/Offshore Block: —		Date: 5-5-92
Charge To: Murphy Oil Corp	Owner:	Contractor: Mast Truck	Assisting Location: None		
Address:	Cust. Order No.:	Referral Loc.:	Well Type: 11	Well Category: 02	
City, State, Zip:		Type and Purpose of Job: 623	Price Schedule: Cont US Land		
Max. Serv. Depth: 3350	Casing Depth: NA	Tubing Size: 2.875	Casing Size: 5.50		
Drill Bit Size:	Gun Size: N.A	Truck/Skid No.: 6058	Truck/Skid Type: DOLF		
Mud Weight:	Mud Type: WR	Well Pressure: 600	Bottom Hole Temp.:		
Code:	API Code:	Hole Type: CH			

We certify that the Fair Labor Standards Act of 1938, as ammended, has been complied with in the production of goods and/or with respect to services furnished covered by this invoice.

PAYMENT TERMS: Invoice payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account. See Work Order Contract for additional Terms and Conditions.

Previous Ticket: L

Price Reference	Secondary Reference	Assist LOC	Description	Depth From	Depth To	Units Qty	Units Meas.	Unit Price	Amount	
750500			Service Charge						865	00
750810			Mast Truck						525	00
751110			Pressure Equipment	0-1000 PSI					1400	00
756110			Temperature Log Depth	0	3350	3350	FT	.40	1340	00
756111			Temperature Log Ops	50	3350	3300	FT	.40	1320	00
756111			Temperature Log Ops	50	3350	3300	FT	.40	1320	00
756111			Temperature Log Ops	50	3350	3300	FT	.40	1320	00

THIS IS NOT AN INVOICE

Received by Customer: Field Prints ( ) Film ( ) Tape ( )

Book Price: 8090 00

Less 70 Discount: 6195 00

Sub Total: 1895 00

Miscellaneous Information

Applicable Taxes Will Be Added On Invoice

David Kupper — Engineer/Operator No. 1 — Emp. # 62433 — % 100

Engineer/Operator No. 2 — Emp. # — %

Above Job Was Satisfactorily Performed

Customer or His Agent (Please Print)

Customer or His Agent (Signature)

District Manager

M HLS 7125

CUSTOMER

HALLIBURTON
LOGGING SERVICES, INC.
A Halliburton Company
Houston

Form HLS-7140

WORK ORDER CONTRACT

ATTACH TICKET NO. 79208

TO: Halliburton Logging Services, Inc., You are hereby requested to furnish equipment and servicemen to deliver and operate the same as an independent contractor to (CUSTOMER) Murphy O.I. Corp and deliver and sell products, supplies and materials for the purpose of performing services as follows:

TYPE OF JOB		LOG UNIT NO.
Diff Temp Log		6058
WELL NO.	LEASE	OWNED BY

As consideration the above named Customer agrees:

(a) To pay Halliburton Logging Services, Inc. (Hereinafter "HLS") in accord with the rates and terms stated in HLS' current price schedules.

(b) To defend, indemnity, release and hold harmless HLS, its divisions, subsidiaries, parent and affiliated companies and the officers, directors, employees, agents and servants of all of them from and against any claims, liability, expenses, attorneys fees, and costs of defense to the extent permitted by law for:

1. Damage to property owned by, in the possession of, or leased by Customer, and/or the well owner (if different from Customer), including, but not limited to, surface and subsurface damage. The term "well owner" shall include working and royalty interest owners.
2. Reservoir, formation or well loss or damage, subsurface trespass or any action in the nature thereof.
3. Personal injury or death or property damage (including, but not limited to, damage to the reservoir, formation or well), or any damages whatsoever, growing out of or in any way connected with, or resulting from pollution, subsurface pressure, losing control of the well and/or a well blowout or the use of radioactive material.

The defense, indemnity, release and hold harmless obligations of Customer provided for in this Section (b) and Section (c) below shall apply to claims or liability even if caused or contributed to by HLS' negligence, strict liability, or the unseaworthiness of any vessel owned, operated, or furnished by HLS or any defect in the data, products, supplies, materials, or equipment of HLS whether in the preparation, design, manufacture, distribution, or marketing thereof, or from a failure to warn any person of such defect. Such defense, indemnity, release and hold harmless obligations of Customer shall not apply where the claims or liability are caused by the gross negligence or willful misconduct of HLS. The term "HLS" as used in said Sections (b) and (c) shall mean HLS, its divisions, subsidiaries, parent and affiliated companies, and the officers, directors, employees, agents and servants of all of them.

(c) That because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, HLS is unable to guarantee the effectiveness of the products, supplies or materials, nor the results of any treatment or service, nor the accuracy of any log or chart interpretation, research analysis, job recommendation or other data furnished by HLS. HLS personnel will use their best efforts in gathering such information and their best judgement in interpreting it, but Customer agrees that HLS shall not be liable for and Customer shall indemnify HLS against any damages arising from the use of such information.

(d) That Customer shall, at its risk and expense, attempt to recover any HLS equipment, tools or instruments which are lost in the well and if such equipment, tools or instruments are not recovered, Customer shall pay HLS its replacement cost unless such loss is due to the sole negligence of HLS. If HLS equipment, tools or instruments are damaged in the well, Customer shall pay HLS the lesser of its replacement cost or the cost of repairs unless such damage is caused by the sole negligence of HLS. In the case of equipment, tools or instruments for marine operations, Customer shall, in addition to the foregoing, be fully responsible for loss of or damage to any HLS' equipment, tools or instruments which occurs at any time after delivery to Customer at the landing until returned to the landing, unless such loss or damage is caused by the sole negligence of HLS.

(e) To furnish at its expense any transportation for HLS marine services personnel to and from point of embarkation.

(f) That HLS warrants only title to the products, supplies and materials and that the same are free from defects in workmanship and materials. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THOSE STATED IN THE IMMEDIATELY PRECEDING SENTENCE. HLS' liability and Customer's exclusive remedy in any cause of action (whether in contract, tort, breach of warranty or otherwise) arising out of the sale or use of any products, supplies or materials is expressly limited to the replacement of such products, supplies or materials on their return to HLS or, at HLS' option, to the allowance to the Customer of credit for the cost of such items. In no event shall HLS be liable for special, incidental, indirect, punitive or consequential damages.

(g) Invoices payable NET by the 20th of the following month after date of invoice. Upon Customer's default in payment of Customer's account by the last day of the month following the month in which the invoice is dated, Customer agrees to pay interest thereon after default at the highest lawful contract rate applicable but never to exceed 18% per annum. In the event it becomes necessary to employ an attorney to enforce collection of said account, Customer agrees to pay all collection costs and attorney fees in the amount of 20% of the amount of the unpaid account.

(h) These terms and conditions shall be governed by the law of the state where services are performed or equipment or materials are furnished.

(i) HLS shall not be bound by any changes or modifications in this contract except where such change or modification is made in writing by a duly authorized executive officer of HLS.

(j) Customer, or his agent, warrants the well is in proper condition to receive the products, supplies, materials and services.

(k) To waive the provisions of the Deceptive Trade Practices - Consumer Protection Act, to the extent permitted by law.

(l) Notwithstanding anything contained herein to the contrary, in the event a logging tool containing a radioactive source or a radioactive source utilized in any other manner by HLS becomes lost or lodged in a well, Customer shall be responsible for meeting all requirements of Section 39.15(a) of the Nuclear Regulatory Commission regulations concerning retrieval and, if necessary, abandonment of lost or lodged sources and to permit HLS to monitor the recovery efforts.

INSTRUMENT PROTECTION [X] NOT OFFERED [ ] ACCEPTED [ ] DECLINED
INIT. INIT. INIT.

I have read and understand this contract and represent that I am authorized to sign the same as Customer's agent.

5-5-92
DATE

TIME SIGNED ☐ A.M. ☒ P.M. 11:42

DISTRICT Williston ND

Customer

THIS CONTRACT MUST BE SIGNED BEFORE WORK IS COMMENCED.

HLS certifies that the Fair Labor Standards Acts of 1938, as amended, has been complied with in the production of products, supplies and materials and/or with respect to services performed under this contract.

#3 Motor
Electro Dynamic

Frame 584 Model AQ 4577 A 2
Type T 115 % SF
Code F des B 3 Phase

Cyc	H.P.	RPM	Volts	Amps
60	125	1175	220/440	304/152

SWS

#3 184 strokes per min Plunger 3 1/4
Motor 10 1/2 Pump 14.0

Plunger	Max Press
4 1/4	705
4	795
3 1/2	1040
3	1420

Pump
serial No. P115-34
Type 346-P size 4 1/4 x 6

Input H.P.	Pump RPM	Pinion RPM
125	250	1110
100	200	888
75	150	666

FREIGHT BILL NUMBER

7 - 09145

DATE

JUN 23 1975

PREPAID FREIGHT CHARGES	COLLECT FREIGHT CHARGES
1287	
OTHER CHARGES	OTHER CHARGES
	COD
FEE	FEE
1287	
TOTAL PREPAID	TOTAL COLLECT

J. H. ROSE TRUCK LINE, INC.

P. O. BOX 90 • PHONE 713/682-1111

HOUSTON, TEXAS 77022

IMPORTANT

REQUEST FOR INSPECTION MUST BE MADE WITHIN 15 DAYS FROM DELIVERY DATE

CONSIGNEE COPY

DRIVER'S SIGNATURE

DATE TIME A.M. P.M.

CUSTOMER'S SIGNATURE

Form 9349A Rev. 4-70 Printed in U.S.A.

SHIPPING ORDER

J.H. ROSE TRUCK LINES

BRANCH NO.	Bill of Lading No.
9700	2007

Carrier – Agent's No.

BRX GARLAND, TEXAS

6-23-75 19
(Month) (Day)

Consigned to OILWELL DIVISION, UNITED STATES STEEL CORPORATION

Assigned to MR MURPHY OIL CORP. C/O OILWELL DIVUS STEEL CRP.

Destination WILLISTON, NORTH DAKOTA State of County of

Route

Delivering Carrier 07 ⟹→ 09145 & Car Initials Car No.

No.	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	Class or Rate	Check Column
1	CTN. PUMP PARTS POWER NOI	901		
	WL 1855	1287		

OILWELL

PREPAID

MAIL INVOICES TO OILWELL, DIVISION OF UNITED STATES STEEL CORPORATION P.O. BOX 7001 GARLAND, TEXAS 75041

CONSIGNEE'S ORDER NO.	OUR ORDER NO.	BR OR ITC NO.	Local Delivery	RAIL	Motor Freight	Railway Express
	3209-T-8827				XXX	

OILWELL DIVISION
UNITED STATES STEEL CORPORATION, Shipper

Per J H Rose 6/25/75 Agent

Post Office Address of Shipper 2001 N. Lamar St., Dallas, Texas.

2

Proposal

JACOBSEN CONSTRUCTION, INC.
Your Butler Builder
Highway 2 & 85 North — Williston, N. Dak.
P.O. Box 1235 — GR 3-3791

PROPOSAL SUBMITTED TO:	PHONE:	DATE: 12/13/63
NAME: Murphy Corporation	JOB NAME:	
STREET: Poplar	STREET:	
CITY:	CITY:	STATE:
STATE: Montana	ARCHITECT:	DATE OF PLANS:

We hereby submit specifications and estimates for: One 16' x 23'10" x 8' Butler Panl-Frame building with one 12" ventilator with damper, one 5' wide x 7' high single slide door, Four A22140 commercial project out steel frame windows.

Building completely erected on 6" x 6" beams supplied by buyer.

Insulated walls and roof with 1½" Ultralite insulation with Foil Skrim Craft facing. Walls and roof interior covered with 28 ga. galvanized flat steel sheets.

One end of building flashed to 9'6" diameter tank.

One 6' x 4' area partitioned off. Partition to go to roof and to be 2x4 studs on 24" centers covered with 28 ga flat galvanized steel sheets each side. Partition to contain single slide 5' wide x 7' high door.

Two to three week delivery.

We hereby propose to furnish labor and materials — complete in accordance with the above specifications, for the sum of:

Twenty-five Hundred Six and 00/100 - - dollars ($ 2506.00) with payment to be made as follows:

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workmen's Compensation Insurance.

Authorized Signature Ted Adams

NOTE: This proposal may be withdrawn by us if not accepted within _____ days.

Acceptance of Proposal

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Accepted: Signature _____

Date _____ Signature _____

FORM 24 REV. 1-63

MURPHY CORPORATION

MURPHY BUILDING
EL DORADO, ARKANSAS

SHOW THIS NUMBER

№ 12830

ON YOUR INVOICE, B/L, CASE, BUNDLES, PACKING LIST AND ALL CORRESPONDENCE.

SPUR ®

PURCHASE ORDER

ORDER DATE	REQ. NO.	DELIVERY DATE REQUIRED
10-23-63	18726	10-30-63

TO

Rice Engineering & Operating, Inc.
1809 Washington Street
Great Bend, Kansas

Attn: Mr. Gordon Jones

SHIP TO

Murphy Corporation
% M. T. James
P. O. Box 547
Poplar, Montana 59255

MAIL INVOICES IN TRIPLICATE TO MURPHY CORPORATION, EL DORADO, ARKANSAS

CHARGE TO	A.F.E. NO.	F.O.D. POINT	SHIP PREPAID VIA
KPU #80-D S.W. Disposal Facilities	3-1519	Poplar, Montana	Best Way

QUANTITY	DESCRIPTION	UNIT PRICE
1	6" x 6" Class 100 F/T C.A. Male E11	
1	6" series 300 C.I. Flange machined out to fit Class 100 F/T C.A.	
4	6" 150 series C.I. Flange machined out to fit Class 100 F/T C.A.	
1	6" x 6" Class 100 F/T C.A. Nipple fully machined	
2	10" C.A. F/T Outside cap Class 100	
2	10" Steel strap for 10" outside C.A. F/T cap Class 100	
2	10" x 36" C.A. F/T nipple with 2" PVC Schedule 80 T.O.E. Nipple 6" from end. Fully machined.	
2	10" Female x 8" male swage nipple C.A. F/T Class 100	
2	8" Full opening gate Valve C.A. F/T Class 100	
1	8" Male x 8" male x 8" Female 45 degree Y C.A. F/T Class 100	
4	8" 150 series C.I. Flange machined out to fit Class 100 F/T C.A.	
1	8" C.A. F/T Class 100 45 degree Male x Female E11	
1	8" Male Class 100 x 8" female Class 100 x 6" side male Class 150 C.A. F/T tee.	
2	6" 150 series C.I. Flanges machined out for Class 150 F/T C.A.	
1	6" Male x 6" Female side opening x 6" female Class 150 F/T C.A. tee	
2	6" Female x 4" Male side opening x 6" male F/T C.A. Class 150 tee	
1	6" Full opening gate valve Class 150 F/T C.A.	
2	4" 150 series C.I. Flanges machined out for Class 150 F/T C.A.	
2	4" F/T Female x 2" T.O.E. PVC Schedule 80 Nipple x 4" F/T Female Side opening tee	
2	Gas relief Valve with 2" female threaded bottom connection	
4	6" 150 series full face gaskets	
2	4" 150 series full face gaskets	
2	8" 150 series full face gaskets	

REMARKS

MURPHY CORPORATION

BY
PURCHASING DEPARTMENT

B. J. Hones

TO BE FILLED IN BY PERSON RECEIVING MATERIAL

RECEIVED VIA

DATE / / BY

PERSON RECEIVING MATERIAL (OFFICE FILE COPY)
(TO BE RETAINED BY DEPARTMENT RECEIVING MATERIAL)

FORM 2A REV. 1-63

MURPHY CORPORATION

MURPHY BUILDING
EL DORADO, ARKANSAS

SHOW THIS NUMBER

№ 12831

ON YOUR INVOICE, B/L, CASE, BUNDLES, PACKING LIST AND ALL CORRESPONDENCE.

SPUR ®

PURCHASE ORDER

ORDER DATE	REQ. NO.	DELIVERY DATE REQUIRED
10-23-63	18724	As Soon As Possible

TO

Black, Sivalls & Bryson
Williston,
North Dakota

SHIP TO

Murphy Corporation
% M. T. James
P.O. Box 547
Poplar, Montana 59255

MAIL INVOICES IN TRIPLICATE TO MURPHY CORPORATION, EL DORADO, ARKANSAS

CHARGE TO	A.F.E. NO.	F.O.B. POINT	SHIP PREPAID VIA
EPU #80-D & S.W. Disposal Facilities	3-1519	Poplar, Montana	Best Way

QUANTITY	DESCRIPTION	UNIT PRICE
1	13" x 15" float	
2	8" std tank flanges complete with bolts	
1	8" Comp. flange to fit 8" trunion	
1	8" trunion and stuffing box assembly and bolts	
1	8" x 6" std. nipple	

REMARKS

MURPHY CORPORATION

BY Louis G. Justice
Louis G. Justice
PURCHASING DEPARTMENT

TO BE FILLED IN BY PERSON RECEIVING MATERIAL

RECEIVED VIA

DATE / / BY

PERSON RECEIVING MATERIAL (OFFICE FILE COPY)
(TO BE RETAINED BY DEPARTMENT RECEIVING MATERIAL)

1-63

MURPHY CORPORATION

MURPHY BUILDING
EL DORADO, ARKANSAS

SHOW THIS NUMBER

№ 12829

ON YOUR INVOICE, B/L, CASE, BUNDLES, PACKING LIST AND ALL CORRESPONDENCE.

SPUR ®

PURCHASE ORDER

ORDER DATE	REQ. NO.	DELIVERY DATE REQUIRED
10-23-63	18726	Oct. 30, 196

TO

South Chester Tube Company
Suite 700
Petroleum Club Building
Tulsa 19, Oklahoma

Attn: Mr. G. E. Foreman

SHIP TO

Murphy Corporation
% M. T. James
P.O. Box 547
Poplar, Montana

MAIL INVOICES IN TRIPLICATE TO MURPHY CORPORATION, EL DORADO, ARKANSAS

CHARGE TO	A.F.E. NO.	F.O.B. POINT	SHIP PREPAID VIA
EPU #80-D & S.W. Disposal Fac.	3-1519	Poplar, Montana	Best Way

QUANTITY	DESCRIPTION	UNIT PRICE
2400'	of 8" Class 100 Century Asbestos-Cement Pipe with fluid Tite couplings, self sealing rings and lubricant	
1	8" xx 13' (Reg. length) full machined Class 100 Century Asbestos Cement Pipe	
1	8" x 10' (reg. length) full machined Class 100 Century Asbestos-Cement Pipe	
1	8" x 6' (reg. length) full machined Class 100 Century Asbestos Cement Pipe	
1	8" x 4' (reg. length) full machined Class 100 Century Asbestos Cement Pipe	
1	8" x 2' (reg. length) full machined Class 100 Century Asbestos Cement Pipe	
2	8" x 1' (reg. length) full machined Class 100 Century Asbestos Cement Pipe	
1	6" x 10' (reg length) full machined Class 100 Century Asbestos Cement Pipe	
12	8" Class 100 Fluid-Tite Couplings with self rubber sealing rings	
6	6" Class 100 Fluid Tite Couplings with self sealing rubber rings	
20	6" Class 100 Fluid Tite self sealing rubber rings	
10	8" Class 100 Fluid Tite Self sealing rubber rings	
	Confirming Phone order to Mr. G. E. Foreman 10-23-63	
	DO NOT DUPLICATE	

REMARKS

MURPHY CORPORATION

BY E. [illegible]
PURCHASING DEPARTMENT

TO BE FILLED IN BY PERSON RECEIVING MATERIAL

RECEIVED VIA

DATE 1/1 BY

PERSON RECEIVING MATERIAL (OFFICE FILE COPY)
(TO BE RETAINED BY DEPARTMENT RECEIVING MATERIAL)

M 24 REV. 1-63

MURPHY CORPORATION

MURPHY BUILDING
EL DORADO, ARKANSAS

SHOW THIS NUMBER

№ 12900

ON YOUR INVOICE, B/L, CASE, BUNDLES, PACKING LIST AND ALL CORRESPONDENCE.

SPUR®

PURCHASE ORDER

ORDER DATE	REQ. NO.	DELIVERY DATE REQUIRED
10-28-63	18725	As Soon As Possible

TO

Continental-Emsco Company
P. O. Box 531
El Dorado, Arkansas

SHIP TO

Murphy Corporation
% M. T. James
P. O. Box 547
Poplar, Montana 59255

MAIL INVOICES IN TRIPLICATE TO MURPHY CORPORATION, EL DORADO, ARKANSAS

E TO	A.F.E. NO.	F.O.B. POINT	SHIP PREPAID VIA
D #80-S.W. Disposal Facil.	3-1519	Poplar, Montana	Best Way

ANTITY	DESCRIPTION	UNIT PRICE
1	2000# pressure Gauge with 1/2" shank	
1	6" (491475) type RBL Norriseal Valves with Epoxy Coated Disc Top shaft boss tapped 1/8" NPT 2 sides, lugs drilled and tapped for std. 150 series ASA Flanges with std. handles complete with cap screws.	
1	4" (491475) type RBL Norriseal Valves with Epoxy Coated Disc Top shaft boss tapped 1/8" NPT 2 sides lugs drilled and tapped for std. ASA Flanges with std. handles complete with cap screws.	
1	6" (491475) type RBL Norriseal valve with Epoxy Coated Disc top shaft boss tapped 1/8" NPT 2 sides, lugs drilled and tapped to fit std. 150 series ASA Flanges with std. handle. Cap screws & gaskets.	
12	2" PVC Schedule 80 Ells threaded.	
10	2" PVC Schedule 80 Tees threaded.	
10	2" x 4" PVC Schedule 80 Nipples threaded.	
10	2" x 6" PVC Schedule 80 Nipples threaded.	
10	2" x 8" PVC Schedule 80 Nipples threaded.	
00'	2" PVC Schedule 80 Threaded Pipe.	
	2" (491475) type RBL Norriseal Valve with Epoxy Coated Disc, top shaft boss tapped 1/8" NPT 2 sides lugs drilled and tapped with std. handle with threaded Companion Flanges and Cap screws.	
	8" (491475) type RBL Norriseal Valve with Epoxy Coated Disc. top shaft boss tapped 1/8" NPT 2 sides, lugs drilled and tapped to fit std. 150 series ASA Flanges with std. handle. Cap screws & gaskets.	
	3" 8 V thread xx 2" reg. thd. heavy swage internally plastic coated.	
250'	of 3-1/2" OD 9.20# J-55 reg. 10 R thd. R 2 Tbg. Internally coated with Tube Kote TK-2, 100% holiday free and retested on location.	
	Fig. 11 Larkin Wall type tbg. packer, 3-1/2" reg.10rd thd. tbg. connection for 5-1/2" 15-5# casing, internally plastic coated.	

- Continued -

KS

MURPHY CORPORATION

BY Lewis G. Justus PURCHASING DEPARTMENT
Lewis G. Justus

TO BE FILLED IN BY PERSON RECEIVING MATERIAL

RECEIVED VIA

DATE / / BY

PERSON RECEIVING MATERIAL (OFFICE FILE COPY)
(TO BE RETAINED BY DEPARTMENT RECEIVING MATERIAL)

24 REV. 1-63

MURPHY CORPORATION

MURPHY BUILDING
EL DORADO, ARKANSAS

SHOW THIS NUMBER

№ 12900 Page 2

ON YOUR INVOICE, B/L, CASE, BUNDLES, PACKING LIST AND ALL CORRESPONDENCE.

SPUR ®

PURCHASE ORDER

ORDER DATE	REQ. NO.	DELIVERY DATE REQUIRED
10-28-63	18725	As Soon As Possible

TO

Continental-Emsco Company
P. O. Box 531
El Dorado, Arkansas

SHIP TO

Murphy Corporation
% M. T. James
P. O. Box 547
Poplar, Montana 59255

MAIL INVOICES IN TRIPLICATE TO MURPHY CORPORATION, EL DORADO, ARKANSAS

E TO	A.F.E. NO.	F.O.B. POINT	SHIP PREPAID VIA
PU #80-D & S. W. Disposal Facilities	3-1519	Poplar, Mont.	Best Way

ANTITY	DESCRIPTION	UNIT PRICE
	Page 2 3" 1000# W.P. 2000# test 10 rd thd. gate valve. Full opening for corrosive salt water service. 3" 1000# W.P. 2000# test steel tees 8 v thd. internally plastic coated. 3" x 6" Hvy nipples, internally plastic coated 8 v thd. 3" x 8" Hvy nipples, internally plastic coated 8 v thd. 3" 1000# W.P. 2000# test steel Ells 8 v thd. internally plastic coated. 3" 8 v thd. hvy bull plug taped 1/2" 1/2" straight needle valve 3" 10 rd. Reg. x 3" 8 v thd x 8" long Ex Hvy. comb. Nipple, Plastic lined.	

KS

MURPHY CORPORATION

BY Lewis G. Justiss
Lewis G. Justiss — PURCHASING DEPARTMENT

TO BE FILLED IN BY PERSON RECEIVING MATERIAL

RECEIVED VIA

DATE 1-1 BY W. T. Brown

PERSON RECEIVING MATERIAL (OFFICE FILE COPY)
(TO BE RETAINED BY DEPARTMENT RECEIVING MATERIAL)

NALCO

File

ANALYTICAL LABORATORY REPORT

>> COUPON REPORT <<

Company: MURPHY OIL
Address: POPULAR, MONTANA

Print date:11/ 1/83
Report No. 83C-1527

COUPON LOCATION	EXPOSURE PERIOD	CHEMICAL IN USE	COUPON NUMBER	CORROSION RATE (mpy)	TYPE OF CORROSION
3-D	08/05/83 to 10/26/83	NONE	01698d	1.1	Gen. Etch
4-D	08/05/83 to 10/26/83	VISCO 3410	01697d	2.3	Pitting
5-D	08/05/83 to 10/26/83	VISCO 3410	01693d	1.2	Pitting
6-D WATER DISPOSAL	08/05/83 to 10/26/83	VISCO 1111 & VISCO 3410	01694d	1.5	Pitting
LILLIAN SWD	10/04/83 to 10/26/83	VISCO 1111 & VISCO 3410	06935	1.7	Gen. Etch

d See Deposit Weight Attachment

NALCO

REPORT OF WATER ANALYSIS

Company: Murphy Oil Corporation, Poplar, Montana

Date: August 20, 1985
Analysis No.
Sampling Date: August 20, 1985
Date Sample Rec'd.: August 20, 1985

Sample Marked: 3-D

DISSOLVED SOLIDS Cations	mg/l	meq/l	RESULTS AS COMPOUNDS	mg/l
Sodium, Na (Calc.)	56,097	2,439	as NaCl	
Calcium, Ca	2,000	100	as $CaCO_3$	5,000
Magnesium, Mg	243	20	as $CaCO_3$	1,000
Barium, Ba	0	0	as $BaSO_4$	0
Cations Total	58,340	2,559		
Anions				
Chloride, Cl	89,836	2,533	as NaCl	148,000
Sulfate, SO_4	845	18	as Na_2SO_4	1,250
Carbonate, CO_3	0	0	as $CaCO_3$	0
Bicarbonate, HCO_3	464	8	as $CaCO_3$	380
Anions Total	91,145	2,559		
Total Dissolved Solids (Calc.)	149,485			
Total Iron, Fe	0.4		as Fe	0.4
Acidity to Phenolphthalein, CO_2	229		as $CaCO_3$	520

OTHER PROPERTIES		$CaCO_3$ STABILITY INDEX
pH	6.0	@ 70° F.
Specific Gravity		@ 120° F.
Turbidity (JTU)		@ 160° F.
Sulfide, as H_2S	(present)	Method of Stiff & Davis

Remarks: cc: D. Kasowski
D. Brown

/mg

NALCO CHEMICAL COMPANY
VISCO CHEMICALS
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REPORT OF WATER ANALYSIS

Company: Murphy Oil Corporation, Poplar, Montana

Date: 12/11/86
Analysis No.
Sampling Date: 12/11/86
Date Sample Rec'd.: 12/11/86

Sample Marked: 80-D

DISSOLVED SOLIDS Cations	mg/l	meq/l	RESULTS AS COMPOUNDS	mg/l
Sodium, Na (Calc.)	65,880.6	2,864.4	as NaCl	
Calcium, Ca	240	12.0	as $CaCO_3$	600
Magnesium, Mg	97.2	8.0	as $CaCO_3$	400
Barium, Ba			as $BaSO_4$	
Cations Total	66,217.8	2,884.4		
Anions				
Chloride, Cl	101,369.0	2,858.6	as NaCl	167,000
Sulfate, SO_4	709.8	14.8	as Na_2SO_4	1,050
Carbonate, CO_3	0	0	as $CaCO_3$	0
Bicarbonate, HCO_3	671	11	as $CaCO_3$	550
Anions Total	102,749.8	2,884.4		
Total Dissolved Solids (Calc.)	168,967.6			
Total Iron, Fe	2.2		as Fe	2.2
Acidity to Phenolphthalein, CO_2	220		as $CaCO_3$	500

OTHER PROPERTIES		$CaCO_3$ STABILITY INDEX
pH	6.6	@ 70° F.
Specific Gravity		@ 120° F.
Turbidity (JTU)		@ 160° F.
Sulfide, as H_2S	(present)	Method of Stiff & Davis

Remarks: cc: D. Kasowski
D. Brown

/mg

NALCO CHEMICAL COMPANY
VISCO CHEMICALS
P. O. BOX 87 • SUGAR LAND, TEXAS 77478

6-15A

NALCO

REPORT OF WATER ANALYSIS

Company: Murphy Oil Corporation, Poplar, Montana

Date: April 2, 1987
Analysis No.
Sampling Date: April 2, 1987
Date Sample Rec'd.: April 2, 1987

Sample Marked: 80-D (Sample taken from disposal pump)

DISSOLVED SOLIDS Cations	mg/l	meq/l	RESULTS AS COMPOUNDS	mg/l
Sodium, Na (Calc.)	53,764.8	2,337.6	as NaCl	
Calcium, Ca	1,200	60	as $CaCO_3$	3,000
Magnesium, Mg	121.5	10	as $CaCO_3$	500
Barium, Ba			as $BaSO_4$	
Cations Total	55,086.3	2,407.6		
Anions				
Chloride, Cl	84,980	2,396.4	as NaCl	140,000
Sulfate, SO_4	135.2	2.8	as Na_2SO_4	200
Carbonate, CO_3	0	0	as $CaCO_3$	0
Bicarbonate, HCO_3	512.4	8.4	as $CaCO_3$	420
Anions Total	85,627.6	2,407.6		
Total Dissolved Solids (Calc.)	140,713.9			
Total Iron, Fe			as Fe	
Acidity to Phenolphthalein, CO_2	123.2		as $CaCO_3$	280

OTHER PROPERTIES		$CaCO_3$ STABILITY INDEX
pH	6.7	@ 70° F.
Specific Gravity		@ 120° F.
Turbidity (JTU)		@ 160° F.
Sulfide, as H_2S	(present)	Method of Stiff & Davis

Remarks: cc: D. Kasowski
D. Brown

/mg

Dale Kasowski
Account Manager

NALCO CHEMICAL COMPANY
VISCO CHEMICALS
P. O. BOX 87 • SUGAR LAND, TEXAS 77478

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REPORT OF WATER ANALYSIS

Company: Murphy Oil Corporation, Poplar, Montana

Date: July 28, 1987
Analysis No.
Sampling Date: July 28, 1987
Date Sample Rec'd. July 28, 1987

Sample Marked: 80-D 9:30 a.m. (MST) Taken from disposal tank

DISSOLVED SOLIDS Cations	mg/l	meq/l	RESULTS AS COMPOUNDS	mg/l
Sodium, Na (Calc.)	59,064	2,568	as NaCl	
Calcium, Ca	1,800	90	as $CaCO_3$	4,500
Magnesium, Mg	243	20	as $CaCO_3$	1,000
Barium, Ba			as $BaSO_4$	
Cations Total	61,107	2,678		
Anions				
Chloride, Cl	94,085	2,654	as NaCl	155,000
Sulfate, SO_4	676	14	as Na_2SO_4	1,000
Carbonate, CO_3	0	0	as $CaCO_3$	0
Bicarbonate, HCO_3	610	10	as $CaCO_3$	500
Anions Total	95,371	2,678		
Total Dissolved Solids (Calc.)	156,478			
Total Iron, Fe			as Fe	
Acidity to Phenolphthalein, CO_2	176		as $CaCO_3$	400

OTHER PROPERTIES		$CaCO_3$ STABILITY INDEX
pH	6.6	@ 70° F.
Specific Gravity	1.105	@ 120° F.
Turbidity (JTU)		@ 160° F.
Sulfide, as H_2S	(present)	Method of Stiff & Davis

Remarks: cc: D. Kasowski
D. Brown
/mg

*Sample container 6 oz. clear prescription bottle

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

27-FEB-89

EPU 80-D
PRODUCED

Page 1

>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	63,415.8	2,757.2	as NaCl	
Calcium	Ca++	880.0	44.0	as CaCO3	2,200.0
Magnesium	Mg++	145.8	12.0	as CaCO3	600.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		64,441.6	2,813.2		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	98,941.0	2,790.1	as NaCl	163,000.0
Sulfate	SO4=	743.6	15.5	as Na2SO4	1,100.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	463.6	7.6	as CaCO3	380.0
Total Anions		100,148.2	2,813.2		
Total Solids		164,589.8			

METALS

Total Iron, Fe	1.5	as Fe	1.5
Acid to Phen, CO2	140.8	as CaCO3	320.0

OTHER PROPERTIES

pH	5.8
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2S ppm	
Temperature F	

Mont A. Jr 2/28/89

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

27-FEB-89

EPU 80-D
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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-1.54	-77.22	NA	NA
80	-1.34	-77.61	NA	NA
100	-1.10	-77.70	NA	NA
120	-0.82	-76.88	NA	NA
140	-0.49	-75.84	NA	NA
160	-0.12	-74.78	NA	NA
180	+0.28	-73.70	NA	NA
200	+0.73	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

27-FEB-89

EPU 80-D
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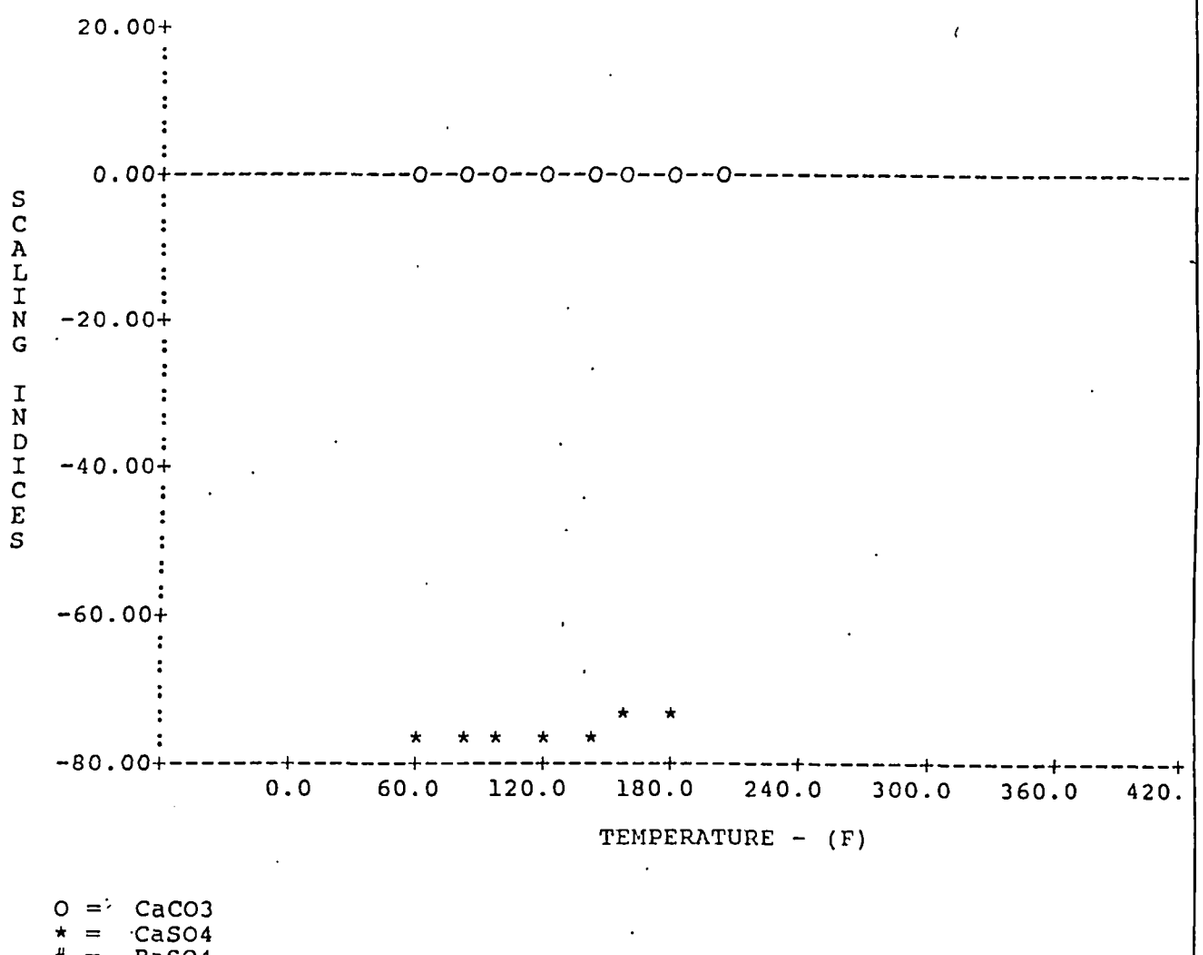
>>> Scaling Indices <<<



O = CaCO3
* = CaSO4
# = BaSO4
X = SrSO4

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

21-JUN-89

EPU #80-D
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>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	57,745.0	2,510.7	as NaCl	
Calcium	Ca++	1,000.0	50.0	as CaCO3	2,500.0
Magnesium	Mg++	121.5	10.0	as CaCO3	500.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		58,866.5	2,570.7		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	90,443.0	2,550.5	as NaCl	149,000.0
Sulfate	SO4=	608.4	12.7	as Na2SO4	900.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	457.5	7.5	as CaCO3	375.0
Total Anions		91,508.9	2,570.7		
Total Solids		150,375.4			

METALS

Total Iron,Fe	1.5	as Fe	1.5
Acid to Phen,CO2	110.0	as CaCO3	250.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Mark A. Jen
6/21/89

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Naperville, IL 60566-1024

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

21-JUN-89

EPU #80-D
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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-1.39	-72.61	NA	NA
80	-1.19	-72.98	NA	NA
100	-0.95	-73.08	NA	NA
120	-0.67	-72.37	NA	NA
140	-0.35	-71.33	NA	NA
160	+0.01	-70.23	NA	NA
180	+0.42	-69.12	NA	NA
200	+0.87	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

21-JUN-89

EPU #80-D
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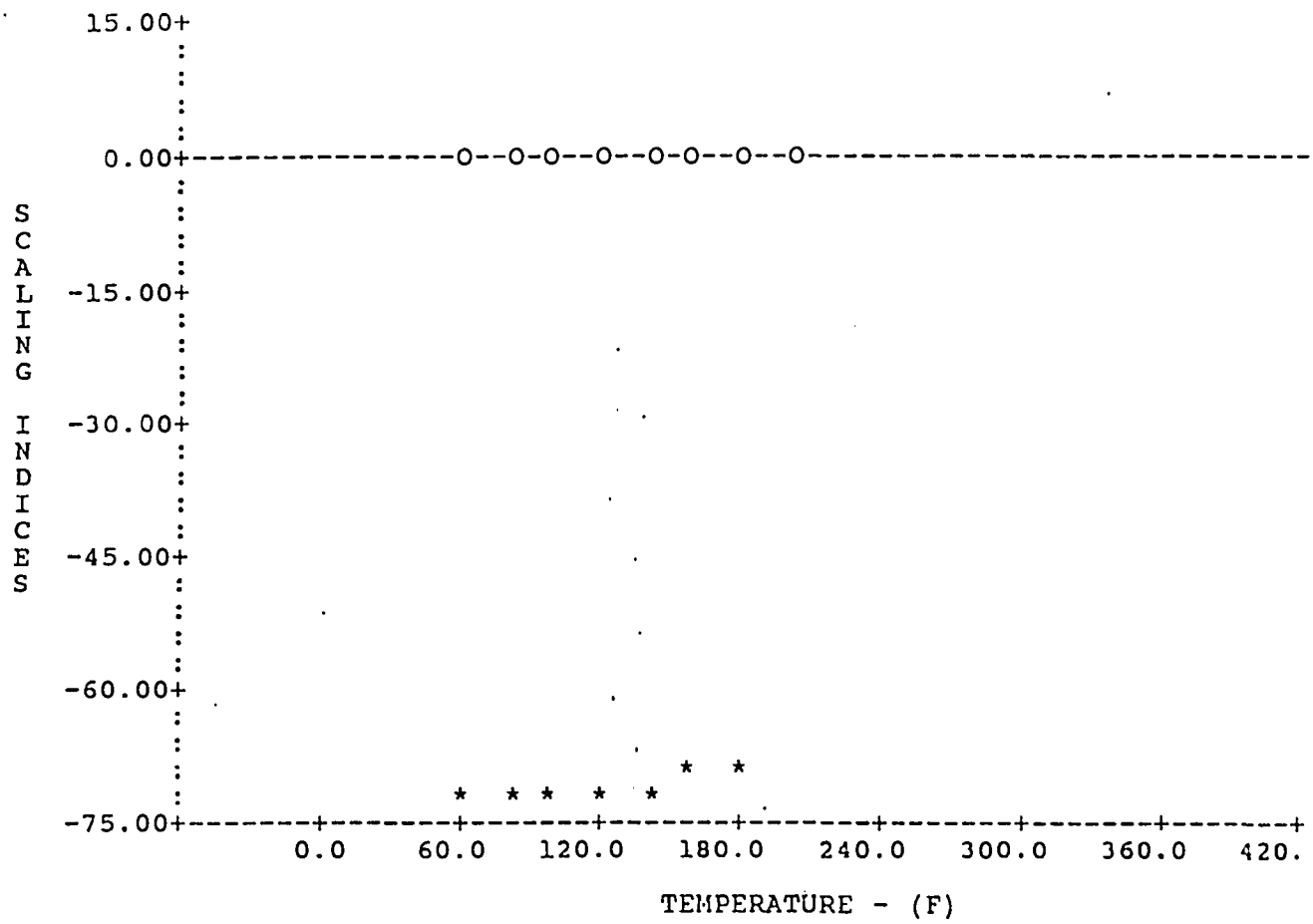
>>> Scaling Indices <<<



O = CaCO3
* = CaSO4
# = BaSO4
X = SrSO4

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

22-SEP-89

EPU 80-D
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Page 1

>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	56,114.8	2,439.8	as NaCl	
Calcium	Ca++	920.0	46.0	as CaCO3	2,300.0
Magnesium	Mg++	170.1	14.0	as CaCO3	700.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		57,204.9	2,499.8		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	88,015.0	2,482.0	as NaCl	145,000.0
Sulfate	SO4=	507.0	10.5	as Na2SO4	750.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	439.2	7.2	as CaCO3	360.0
Total Anions		88,961.2	2,499.8		
Total Solids		146,166.1			

METALS

Total Iron,Fe	2.0	as Fe 2.0
Acid to Phen,CO2	114.4	as CaCO3 260.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Mark A. Jones
9-22-89

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

22-SEP-89

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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-1.49	-74.76	NA	NA
80	-1.30	-75.12	NA	NA
100	-1.06	-75.22	NA	NA
120	-0.77	-74.55	NA	NA
140	-0.45	-73.50	NA	NA
160	-0.08	-72.39	NA	NA
180	+0.32	-71.27	NA	NA
200	+0.77	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

22-SEP-89

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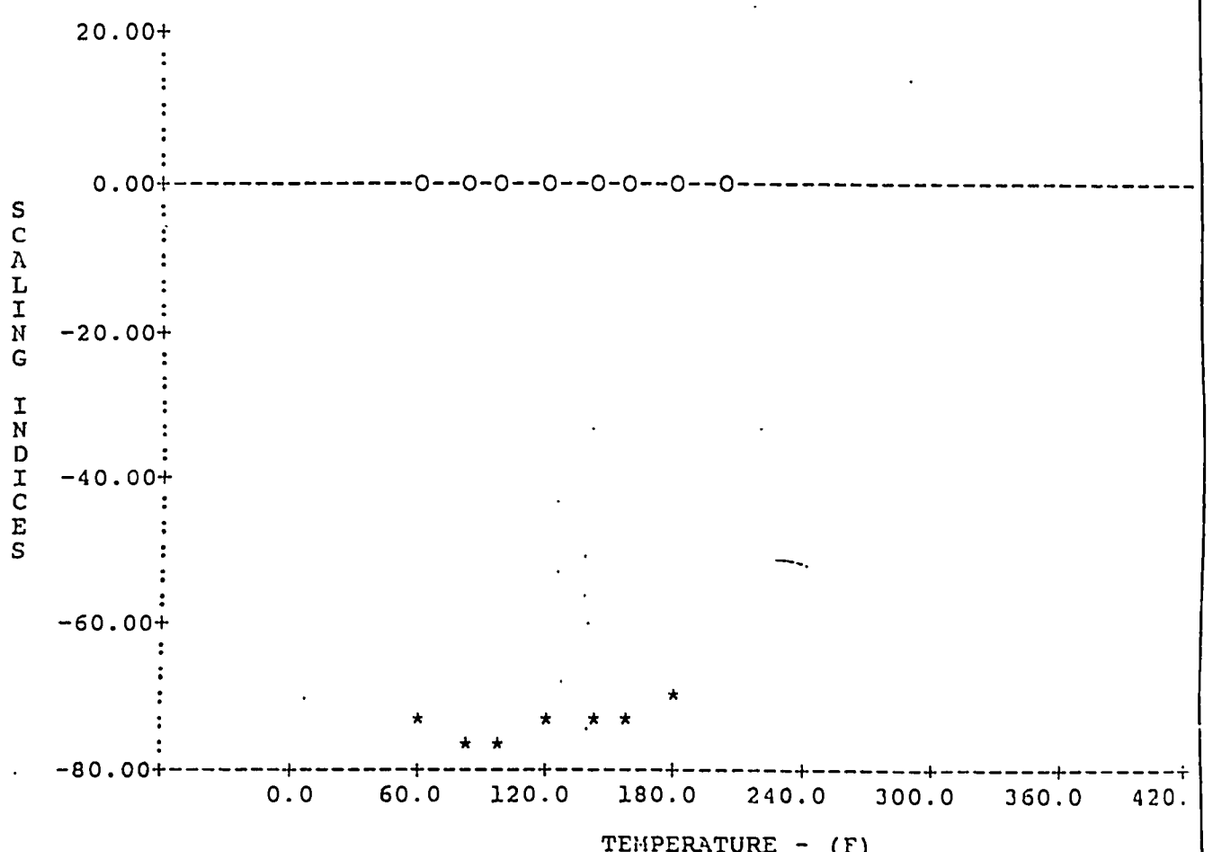
>>> Scaling Indices <<<



O = CaCO3
* = CaSO4
# = BaSO4
X = SrSO4

ANALYTICAL LABORATORIES

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

11-DEC-89

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>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	52,452.4	2,280.5	as NaCl	
Calcium	Ca++	880.0	44.0	as CaCO3	2,200.0
Magnesium	Mg++	315.9	26.0	as CaCO3	1,300.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		53,648.3	2,350.5		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	82,552.0	2,328.0	as NaCl	136,000.0
Sulfate	SO4=	777.4	16.2	as Na2SO4	1,150.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	390.4	6.4	as CaCO3	320.0
Total Anions		83,719.8	2,350.5		
Total Solids		137,368.1			

METALS

Total Iron,Fe	1.0	as Fe 1.0
Acid to Phen,CO2	140.8	as CaCO3 320.0

OTHER PROPERTIES

pH	5.8
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Mark 12-11-89

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ANALYTICAL LABORATORY REPORT

MURPHY CORPORATION
POPLAR, MONTANA

14-DEC-90

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>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l H
Sodium	Na+	60,456.7	2,628.6	as NaCl	
Calcium	Ca++	1,060.0	53.0	as CaCO3	2,650.0
Magnesium	Mg++	243.0	20.0	as CaCO3	1,000.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		61,759.7	2,701.6		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	95,299.0	2,687.4	as NaCl	157,000.0
Sulfate	SO4=	419.1	8.7	as Na2SO4	620.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	329.4	5.4	as CaCO3	270.0
Total Anions		96,047.5	2,701.6		
Total Solids		157,807.2			

METALS

Total Iron,Fe	1.5	as Fe	1.5
Acid to Phen,CO2	70.4	as CaCO3	160.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Mark Le Nalco Chemical 12-21-90

Form 738 (8-89)

Analytical Laboratory Locations:
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ANALYTICAL LABORATORY REPORT

MURPHY CORPORATION
POPLAR, MONTANA

14-DEC-90

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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-1.51	-76.28	NA	NA
80	-1.31	-76.65	NA	NA
100	-1.07	-76.74	NA	NA
120	-0.79	-75.98	NA	NA
140	-0.46	-74.95	NA	NA
160	-0.09	-73.89	NA	NA
180	+0.31	-72.82	NA	NA
200	+0.76	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORP.
POPLAR, MONTANA

17-DEC-91

EPU 80-D
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>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	54,641.0	2,375.7	as NaCl	
Calcium	Ca++	800.0	40.0	as CaCO3	2,000.0
Magnesium	Mg++	182.3	15.0	as CaCO3	750.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		55,623.3	2,430.7		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	85,587.0	2,413.6	as NaCl	141,000.0
Sulfate	SO4=	439.4	9.1	as Na2SO4	650.0
Carbonate	CO3=			as CaCO3	
Bicarb.	HCO3-	488.0	8.0	as CaCO3	400.0
Total Anions		86,514.4	2,430.7		
Total Solids		142,137.7			

METALS

Total Iron,Fe	7.5	as Fe 7.5
Acid to Phen,CO2	118.8	as CaCO3 270.0

OTHER PROPERTIES

pH	5.8
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Form 738 (8-89)

ılytical Laboratory Locations:
ALCO CHEMICAL COMPANY
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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORP.
POPLAR, MONTANA

17-DEC-91

EPU 80-D
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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-1.56	-77.25	NA	NA
80	-1.36	-77.60	NA	NA
100	-1.12	-77.71	NA	NA
120	-0.84	-77.08	NA	NA
140	-0.51	-76.01	NA	NA
160	-0.15	-74.89	NA	NA
180	+0.25	-73.75	NA	NA
200	+0.70	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

alytical Laboratory Locations:
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ANALYTICAL LABORATORY REPORT

EPA # MTS2026-0026

MURPHY OIL CORPORATION
POPLAR, MONTANA

17-DEC-92

EPU 80D
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Page 1

>>> Oil Field Water Analysis <<<

DISSOLVED SOLIDS

Cations		mg/l	meq/l		mg/l
Sodium	Na+	65,664.1	2,855.0	as NaCl	
Calcium	Ca++	240.0	12.0	as CaCO3	600.0
Magnesium	Mg++	121.5	10.0	as CaCO3	500.0
Barium	Ba++			as CaCO3	
Strontium	Sr++			as CaCO3	
Total Cations		66,025.6	2,877.0		

Anions		mg/l	meq/l		mg/l
Chloride	Cl-	101,369.0	2,858.6	as NaCl	167,000.0
Sulfate	SO4=	574.6	12.0	as Na2SO4	850.0
Carbonate	CO3=			as CaC33	
Bicarb.	HCO3-	390.4	6.4	as CaCO3	320.0
Total Anions		102,334.0	2,877.0		
Total Solids		168,359.6			

METALS

Total Iron, Fe	2.5	as Fe 2.5
Acid to Phen, CO2	77.0	as CaCO3 175.0

OTHER PROPERTIES

pH	5.9
Specific Gravity	1.1
Turbidity	
Oxygen, as O2 ppm	
Sulfide as H2Sppm	
Temperature F	

Mark A. Jw 1-7-92

Form 738 (8-89)

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ALCO CHEMICAL COMPANY
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ANALYTICAL LABORATORY REPORT

MURPHY OIL CORPORATION
POPLAR, MONTANA

17-DEC-92

EPU 80D
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>>> Scaling Indices <<<

Positive values indicate scaling tendencies

Temperature (Deg. F)	Calcium Carbonate	Calcium Sulfate	Barium Sulfate	Strontium Sulfate
60	-2.08	-96.93	NA	NA
80	-1.88	-97.33	NA	NA
100	-1.64	-97.41	NA	NA
120	-1.36	-96.58	NA	NA
140	-1.03	-95.54	NA	NA
160	-0.66	-94.45	NA	NA
180	-0.25	-93.36	NA	NA
200	+0.19	NA	NA	NA
220	NA	NA	NA	NA
240	NA	NA	NA	NA
260	NA	NA	NA	NA
280	NA	NA	NA	NA
300	NA	NA	NA	NA
320	NA	NA	NA	NA

Form 738 (8-89)

tical Laboratory Locations:

LCO CHEMICAL COMPANY
ALCO CENTER □ NAPERVILLE, ILLINOIS 60563-1198
OFFICE BOX 87 □ SUGAR LAND, TEXAS 77487-0087

Quali-Trak™

NATIONAL-OILWELL
Production Systems

#43316
FIELD SERVICE REPORT

REPORT Nº 30105
STORE: Watford City
REPRESENTATIVE: Tom Hatlestad
DATE: 9-22-90

TOMER Murphy Oil LEASE East Poplar Unit
ATION WELL NO. 80-D

IBLE AS PORTED	TROUBLE AS FOUND

VICE PERFORMED
R REMARKS Travel to Location, took Guard off pump, drained oil on pump, pulled covers, took intermediate rods out, loosened motor took sheeve off, pulled crank out, pulled crossheads out of pump spected crosshead pins & bushings, all were in good shape, main bearings were owing wear, changed out main bearings, changed out one Retainer, changed out all ree intermediate rods due to being scored, change out wipers, put crank back to pump, with 1004 end play, torked connecting rods onto crank put intermediate ds in pump and tightened, put oil in Gear end put covers on put # Sheeve ck on, put new belts on, aligned sheaves, put Guard on, started pump Travel to shop

PARTS USED

PART NO.	DESCRIPTION	UNIT	TOTAL
17100 018	Baffles		
1710011	wipers		
2T3631	bearings		
1710011	Retainer		
1710 006	inter rods		

ME: FROM 6:30 O'CLOCK TO 5:30 O'CLOCK = 11.0 HOURS @ 31.00 PER HOUR _____

ILEAGE: FROM 61799 TO 62047 = 248 MILES @ .55 PER MILE _____

Total Charge _____

USTOMER _____ BY _____ DATE _____

BOVE CHARGES WILL BE BILLED BY: National Oilwell Production
HARGED: Watford City ND
S.O. NO. _____
D.M. NO. _____

rm No. 1053 ORIGINAL - ATTACH TO SALES ORDER OR DELIVERY TICKET

NATIONAL-OILWELL
Production Systems

51061
FIELD SERVICE REPORT

REPORT № 21526
STORE: Watford C.t.
REPRESENTATIVE: Tom Kilbourn
DATE: 11-7-91

STOMER Murphy
CATION

LEASE
WELL NO.

UBLE AS EPORTED	TROUBLE AS FOUND

IVICE PERFORMED
IR REMARKS pulled sheave & hub off, pulled bull Gear off shaft, took shaft reducers off pump, pulled Jack shaft out of pump, pulled crank shaft out of pump, tried pulling Gear off Jack shaft, could not get gear off after 3 tries, took shaft down to machine shop to press off, got gear off brought shaft back to shop, steam clean power end & brought to machine shop for boring crosshead bores.

PARTS USED

L.	PART NO.	DESCRIPTION	UNIT	TOTAL

IE: FROM 7:00 O'CLOCK TO 5:00 O'CLOCK = 10 HOURS @ 31.00 PER HOUR _____

EAGE: FROM _____ TO _____ = _____ MILES @ _____ PER MILE _____

Total Charge _____

ISTOMER _____ BY _____ DATE _____

OVE CHARGES WILL BE BILLED BY: National Oilwell Production
ARGED: Watford C.t. ND
S.O. NO. _____
O.M. NO. _____
n No. 1053

CUSTOMER COPY

FOR QUESTIONS TO
NATIONAL-OILWELL
HIGHWAY 22 EAST
BOX 1286 (701) 842-2902
WILLISTON ND 58854

NATIONAL-OILWELL

DELIVERY TICKET PAGE 1
****
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 11/13/91 SHIP VIA: DELV PREPAID
AD: Y
INITIALS: CEZ

DELIVERY TICKET: 7484-051061
****
* DELIVERY TICKET ONLY *
* D O N O T P A Y *
* INVOICE WILL BE MAILED *
****

file copy

CUSTOMER CODE: 447500

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

ORDERED BY: RAY RIEDE
ORDER NO:
LEASE:
WELL/RIG: EPUSWD #80
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RENTAL	NET AMOUNT
1.000	EA	8817	BORE FRAME AND MACHINE CROS SHEADS, SLEEVE THREE STUFFING BOXES, SLEEVE BEAR ING RETAINER	2,132.94	$2,132.94
1.000	EA	08017024	P17-24 GASKET	11.00	$11.00
1.000	EA	7310	INBOUND UPS ON ABOVE	7.89	$7.89
4.000	EA	09447010	ROD-CONNECTING	480.62	$2,042.46
3.000	EA	08444002	BEARING CRANKPIN 2 -HALVES	50.85	$152.55
6.000	EA	75102005	COTTER, STEEL, 1/8X11/2	0.04	$0.24
1.000	EA	08427003	X4 3/8X26 1/2X1/16 GASKET	11.00	$11.00
4.000	EA	75670003	Y107-21 RETAINING PLATE	1.90	$11.40
3.000	EA	08464001	GASKET	3.23	$9.69
3.000	EA	08411016	RING-LANTERN 2-3/8 BAKELITE	34.70	$104.10
1.000	EA	08213266	P17-346 CRANK SHAFT	4,196.45	$4,196.45

MATERIAL LISTED ABOVE RECEIVED BY DATE CUSTOMER AGREES THAT HE IS FAMILIAR WITH SELLER'S PUBLISHED TERMS AND CONDITIONS PRINTED ON

END QUESTIONS TO:
ATIONAL-OILWELL
IGHWAY 23 EAST
OX 1286 (701) 842-2902
ATFORD CITY ND 58854

NATIONAL-OILWELL

DELIVERY TICKET PAGE 2
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 11/12/91 SHIP VIA: DELV PREPAID
AB: Y
INITIALS: CEZ

DELIVERY TICKET: 7484-051061
****
* DELIVERY TICKET ONLY *
* DO NOT PAY *
* INVOICE WILL BE MAILED *
****

CUSTOMER CODE: 4675700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

...SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
2.000	EA	65010966	X6461 TIMKEN CONE	58.07	$116.14
2.000	EA	65013405	X6420 TIMKEN CUP	26.38	$52.76
1.000	EA	68630375	SEAL, OIL	12.70	$12.70
1.000	EA	08017068	SHIMS- SET P17-42	31.63	$31.63
1.000	EA	08017083	P17-45 GEAR SPACER	64.69	$64.69
2.000	EA	65010042	X938 TIMKEN CONE	247.00	$494.00
2.000	EA	65013235	X932 TIMKEN CUP	82.84	$165.68
3.000	EA	08017706	PIN- CROSS HEAD P17-209	92.10	$276.30
3.000	EA	08441027	BAFFLE-WATER	27.23	$81.69
1.000	EA	08017093	GASKET- P17-107	7.50	$7.50
1.000	EA	08017103	SHIMS- SET P17-53	43.93	$43.93
1.000	EA	08017966	RING-OIL PRESS	98.33	$98.33

END QUESTIONS TO:
ATIONAL-OILWELL
(0-4000(REV 9-90)
IGHWAY 28 EAST
OX 1286 (701)-842-2902
AYFORD CITY ND 58854

NATIONAL-OILWELL

DELIVERY TICKET PAGE 3
****
PLEASE MAIL CHECKS TO:
P. O. BOX 843984
DALLAS, TX 75284-3984

DATE DELD/SHPD: 11/12/91 SHIP VIA: DELV PREPAID
AD: Y
INITIALS: CSZ

CUSTOMER CODE: 4675700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

DELIVERY TICKET: 7484-051061
****
* DELIVERY TICKET ONLY *
* DO NOT PAY *
* INVOICE WILL BE MAILED *
****
ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
1.000	EA	00017961	GASKET- P17-281	48.10	$48.10
1.000	EA	05275003	P17-308-GASKET	55.20	$55.20
1.000	EA	08483038	BROWN&SHARPE NO1 PUMP MODIF TCATION F/ 336P	322.00	$322.00
3.000	EA	99094007	CLAMP- HOSE, 1 5/8" - 3 1/2 ", IDEAL 6448	1.91	$5.73
12.000	EA	00406001	GASKET	3.30	$39.60
1.000	EA	9310	INBOUND MOTOR FREIGHT ON SHAFT, ETC.	391.62	$391.62
1.000	EA	44162049	VALVE- RELIEF, 1/4 IN, BROWN & SHARPE 713-9001-20	49.72	$49.72
3.000	EA	342757	PACKING, KVI R 3-3/4 X 4-3/4 X 1-7/8	88.95	$266.85
1.000	EA	4404214	NIPPLE- PIPE, XH SMLS PNSR TO BLK, 1/4 X CLOSE	1.78	$1.78
1.000	EA	2230050	GAGE, TEMP	69.09	$69.09
1.000	EA	9219	LOT OF BOLTS, COPPER TBG PARTS AND FITTINGS	12.06	$12.06
1.000	EA	4417389	CONNECTION- BRASS, 1/4 X 1/ 4 IN, IMPERIAL 60-1	1.74	$1.74

END QUESTIONS TO:
ATIONAL-OILWELL
NO-4000(REV. 9-90)
IGHWAY 23 EAST
OX 1284 (701) 842-7924
AFORD CITY ND 58854

NATIONAL-OILWELL

RETURN TICKET PAGE 4
****
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD 11/12/91 SHIP VIA: DELD PREPAID
AD: Y
INITIALS: DEJ

DELIVERY TICKET: 7484-051001
****
* DELIVERY TICKET ONLY *
* DO NOT PAY *
* INVOICE WILL BE MAILED *
****
ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

CUSTOMER CODE: 647700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
FL DORADO AR
71730

...SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
1.000	EA	4587939	SCREW- CAP, BRIGHT FINISH, HEX HEAD NC 5/8X5 IN	0.72	$0.72
1.000	EA	4486115	ELBOW- 90D STRAIGHT BLACK, MI 3/8 IN 150# 2000SO	0.63	$0.63
1.000	EA	4404005	NIPPLE- PIPE, XH SMLS PRSR 18 BLK, 1/2 X 1 1/2	1.21	$1.21
1.000	EA	4119616	DAMPENER- PULSATION, 1/2 IN CBN STL, MURPHY PD0104	27.00	$27.00
1.000	EA	4430749	BUSHING- HEX, FS 1/2 X 1/4 SE	0.72	$0.72
1.000	EA	4625786	NIPPLE- PIPE, XH SMLS PRSR 18 BLK, 1/4 X 1 1/2	1.82	$1.82
2.000	EA	4587965	WASHER- LOCK, 3/8 IN MED UM	0.02	$0.04
2.000	EA	4530200	NUT HEX, HEAVY NC 3/8 I N	0.04	$0.08
1.000	EA	4582016	SCREW- CAP, BRIGHT FINISH, HEX HEAD NC 1/2X2 IN	0.22	$0.22
1.000	EA	5121702	SWITCH- SAFETY, W/CPR TUBE VENT, MURPHY L-129	52.65	$52.65
1.000	EA	4096474	NIPPLE- PIPE, WELDED STR BL K, 1/4 X 4	0.64	$0.64
1.000	EA	4435207	BUSHING- HEX, FS 1/4 X 1/8 SE	0.72	$0.72

MATERIAL LISTED ABOVE RECEIVED BY DATE CUSTOMER AGREES THAT HE IS FAMILIAR WITH SELLER'S PUBLISHED TERMS AND CONDITIONS POSTED ON

SEND QUESTIONS TO:
NATIONAL OILWELL
HIGHWAY 28 EAST
PO BOX 1286 (701)-842-7902
ATFORD CITY ND 58854

N-O-4000 (REV. 9-80)

NATIONAL-OILWELL

DELIVERY TICKET / PAGE 1

PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 11/12/91 SHIP VIA: DELV PREPAID
AD: Y
INITIALS: LMZ

DELIVERY TICKET: 7484-051061

* DELIVERY TICKET ONLY *
* DO NOT PAY *
* INVOICE WILL BE MAILED *

CUSTOMER CODE: 447200

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
3.000	EA	08466010	DIAPHRAGM CONP INCL 1 08-46 6-OIL 2 49-002-925 2 75-509	174.00	$522.00
4.000	EA	49002925	STUD 1/2 X 2 LG	0.74	$4.44
3.000	EA	08467006	DIAPHRAGM-GLAND	50.37	$151.11
6.000	EA	75509994	X1/2-13 THD HEX HVY ESNA NUT	17.70	$106.20
9.000	EA	08466017	WIPER-ROD	7.16	$64.44
3.000	EA	08412170	PLATE CROSSHEAD BAFFLE	7.83	$23.49
4.000	EA	75695623	X1/2-13X3/4LG SELF LOCK SOC HD HT CAPSCREW	1.30	$7.80
1.000	EA	00017164	P17-65A 70-T O P DRIVE SPROCKET	98.56	$98.56
8.000	EA	45343001	CAPSCREW Y69-30-1 1/2IN-13 THD X 3/4 HEX HD DRILLED	0.95	$7.60
1.000	EA	08200145	SPROCKET-1/2P RC41 15T TYPE B F/ 36-P 46-P & 396-P	57.04	$57.04
33.000	EA	9100	HOURS LABOR PER FSR'S # 21326, 21549, 21769 TO DISASSEMBLE, CLEAN UP, REASSEMBLE 346P OILWELL	31.00	$1,023.00

END QUESTIONS TO.
ATIONAL-OILWELL.
IGHWAY 25 EAST
OX 1286 (701)-842-2902
ATFORD CITY ND 58054

NATIONAL-OILWELL

N-O-4000(REV. 9-90)

DELIVERY TICKET PAGE 6
****
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 11/12/91 SHIP VIA: DELV PREPAID
AD: Y
INITIALS: CEX

CUSTOMER CODE: 6675700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

DELIVERY TICKET: 7484-051061
****
* DELIVERY TICKET ONLY *
* D O N O T P A Y *
* INVOICE WILL BE MAILED *
****
ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

UANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
			TRIPLEX		
6.000	EA	08496269	VALVE ASSY SS W/DELRIN DISC FK-P4-400	165.49	$992.94
3.000	EA	08804117	CROSSHEAD OVERSIZED	465.32	$1,395.96
3.000	EA	08412030	PLUNGER- TC 3-3/4	337.60	$1,012.80
3.000	EA	08441026	ROD-EXTENSION	196.00	$588.00
3.000	EA	342127	GLAND, SB 3-3/4 X 4-3/4 KVLR	185.13	$555.39
3.000	EA	342359	FOLLOWER, SPG 3-3/4 X 4-3/4 KVLR	134.04	$402.12
1.000	EA	9310	UPS	6.52	$6.52
3.000	EA	342269	SPRING, KVLR PKG	109.80	$329.40
6.000	EA	86486454	PLUG- PIPE,1/8 STD CI BLACK COUNTERSUNK	0.16	$0.96
1.000	EA	44229100	BREATHER- AIR MAZE 6KONS	34.00	$34.00

SUBTOTAL	$18,799.58
TAX	$0.00
TOTAL	$18,799.58

END QUESTIONS TO:
ATIONAL-OILWELL
IGHWAY 23 EAST
OX 1286 (701)-842-2902
ATFORD CITY ND 58854

NATIONAL-OILWELL

DELIVERY TICKET PAGE 1
****
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 12/07/91 SHIP VIA: CO.TRK. PREPAID
AD: Y
INITIALS:

CUSTOMER CODE: 5475700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

DELIVERY TICKET: 7484-051480
****
* DELIVERY TICKET ONLY *
* D O N O T P A Y *
* INVOICE WILL BE MAILED *
****
ORDERED BY: RAY REEDE
ORDER NO:
LEASE:
WELL/RIG:
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

Our copy of tickets

QUANTITY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
1.000	EA	8319	BORE & SLEEVE ONE EXTRA STU FFING BOX TO ACCEPT 3 3/4 KEVLAR FOR 346 P OTLW ELL	381.18	$381.18

SUBTOTAL $381.18
TAX

MATERIAL LISTED ABOVE RECEIVED BY DATE CUSTOMER AGREES THAT HE IS FAMILIAR WITH SELLER'S PUBLISHED TERMS AND CONDITIONS PRINTED ON

NATIONAL-OILWELL
Production Systems

51061

FIELD SERVICE REPORT

REPORT **No. 31769**
STORE: 7484
REPRESENTATIVE: Martin Mulder
DATE: 12/7/91

ISTOMER MURPHY OIL — LEASE

CATION — WELL NO.

OUBLE AS EPORTED	TROUBLE AS FOUND
WORKED ON OILWELL PUMP	

VICE PERFORMED
R REMARKS ~~[illegible]~~ PULLED SHEAVE, HUB, BULL GEAR OFF PUMP.
CLEANED UP COVERS & PARTS FOR RE-ASSEMBLY.
INSTALLED NEW OIL PUMP, FITTINGS, LINES & RELIEF VALVE

PARTS USED

PART NO.	DESCRIPTION	UNIT	TOTAL

E: FROM 7:00 O'CLOCK TO 3:00 O'CLOCK = 8 HOURS @ 31.00 PER HOUR _____

EAGE: FROM _____ TO _____ = _____ MILES @ _____ PER MILE _____

Total Charge _____

TOMER _____ BY _____ DATE _____

VE CHARGES WILL BE BILLED BY: NATIONAL OILWELL
BOX 1286
WATFORD CITY, ND

RGED:
O. NO. _____
M. NO. _____

No. 1053

CUSTOMER COPY

END QUESTIONS TO:
ATIONAL-OILWELL
IGHWAY 23 EAST
OX 1286 (701)-842-2902
ATFORD CITY ND 58854

NATIONAL-OILWELL

DELIVERY TICKET PAGE 1
****
PLEASE MAIL CHECKS TO:
P. O. BOX 845984
DALLAS, TX 75284-5984

DATE DELD/SHPD: 12/16/91 SHIP VIA: DELV PREPAID
AD: Y
INITIALS: TLC

DELIVERY TICKET: 7484-051624
****
* DELIVERY TICKET ONLY *
* D O N O T P A Y *
* INVOICE WILL BE MAILED *
****

Our Copy

CUSTOMER CODE: 6675700

SOLD TO
MURPHY OIL U.S.A. INC.

200 PEACH STREET
EL DORADO AR
71730

SHIP TO
MURPHY OIL U.S.A. INC.

POPLAR, MT

ORDERED BY: RAY LEEDE
ORDER NO:
LEASE: EPU
WELL/RIG: 800
BLANKET PO:
TAX LOC: 2700 TAX CODE: 0

UAN TY SOLD	UM	ITEM CODE	PART DESCRIPTION	NET RESALE	NET AMOUNT
10.000	EA	9160	HRS. TRAVEL TIME AND LABOR TO INSTALL STUFFING BOXES, PLUNGERS, INTERMEDIATE, & START UP & MONITOR FSR #21566	31.00	$310.00
234.000	EA	9160	MILES CO. CAR FSR #21566	0.55	$128.70

SUBTOTAL	$438.70
TAX	$0.00
TOTAL	$438.70

MATERIAL LISTED ABOVE RECEIVED BY DATE CUSTOMER AGREES THAT HE IS FAMILIAR WITH SELLER'S PUBLISHED TERMS AND CONDITIONS PRINTED ON T

NATIONAL-OILWELL
Production Systems

#51624

FIELD SERVICE REPORT

REPORT № 21566
STORE: 2484
REPRESENTATIVE: Tim
DATE: 12-16-91

CUSTOMER Murphy Oil
LEASE EPU
LOCATION
WELL NO. 80D

TROUBLE AS REPORTED	TROUBLE AS FOUND
Start up repaired pump	

SERVICE PERFORMED OR REMARKS Travel to loc-on loc 10:00CDT- Installed boxes & rods -hooked up suction line- Had to loosen & realign sid cylinder to get boxes installed - Ready to start pump 2:00 - Ran for 5 minutes & shut down due to leak at check valve- Traveled to 8D lease to inspect other 36P triplex- returned in 2 hr. & started unit - Ran for about 40 minutes & monitered for any problems -found none - Traveled to wc shop

PARTS USED

QTY.	PART NO.	DESCRIPTION	UNIT	TOTAL
		2hrs to inspect pump at 8D		

TIME: FROM 8:00CDT O'CLOCK TO 8:00CDT O'CLOCK = 10.0 HOURS @ 31.00 PER HOUR 310.00

MILEAGE: FROM 20832 TO 20966 = 234 MILES @ .55 PER MILE 128.20

Total Charge 438.20

CUSTOMER Murphy Oil BY DATE

ABOVE CHARGES WILL BE BILLED BY: National Oilwell

CHARGED:
W.O. NO.
P.M. NO.
Form No. 1053

Watford City, N.A

CUSTOMER COPY

NATIONAL-OILWELL
Production Systems

51061
FIELD SERVICE REPORT

REPORT № 21549
STORE: Watford City
REPRESENTATIVE: Tom Lafferty
DATE:

STOMER Murphy
CATION

LEASE
WELL NO.

UBLE AS EPORTED	TROUBLE AS FOUND

VICE PERFORMED
R REMARKS cleaned up shafts, retainers, for inspection, put bearings on shafts, installed crankshaft, put crosshead pins in & installed crossheads, spaced out crank at 0 end play, put bull gear on crank & gear on lockshaft, cleaned up covers & installed, put retainers on pump, got pump ready to go to field, installed oil pump & lines. put covers on pump

PARTS USED

PART NO.	DESCRIPTION	UNIT	TOTAL

E: FROM 7:00 AM O'CLOCK TO 10:00 PM O'CLOCK = 15 HOURS @ 31.00 PER HOUR

EAGE: FROM _____ TO _____ = _____ MILES @ _____ PER MILE

Total Charge

STOMER _____ BY _____ DATE _____

VE CHARGES WILL BE BILLED BY: National Oilwell Production
RGED:
O. NO. _____ Watford City ND
M. NO. _____
No. 1053 CUSTOMER COPY

INTERNAL TRANSFER CHARGE

505 REV. 11-69
D IN U. S. A.

1:50
2:15

USS OILWELL
Division of United States Steel Corporation

oday
urphy Oil Corp.

urphy Oil Corp.
oplar, Monta na 75255

6-15-72

CREDIT APPROVED

REQUISITION OR IHO NO. 3209-T-7161

DATE 6-15-72

COST CODES	BRANCH NO.	ITC NO.
A-Inventory B-Other Operating Cost C-Whse and Shipping Cost		

SHIP CHEAPEST WAY UNLESS OTHERWISE SPECIFIED BELOW:

QUOTATION AND DATE

FREIGHT [ ] P.P. [XXX]

CUSTOMER ORDER NUMBER: BD435

LEASE OR LOCATION AND WELL NO.: EPU SWD

SHIPPED FROM

DATE SHIPPED

PREPAID [XX] COLLECT [ ]

F.O.B.

SALES OR USE TAX RATE CODE

STATE CODE TO 83 FROM 73

QUANTITY SHIPPED	UNIT	COMMODITY NO.	STANDARD DESCRIPTION	SOURCE QUAN.	SOURCE LOCATION	RATIO	CODE	UNIT COST	EXTENSION	TAX CODE
2	ea	08416025	Valve Spring 23-610-06		97		A			
							B			
							C			22
							A			
							B			
							C			
							A			
							B			
							C			
			Springs SoH Station #3				A			
							B			
							C			
							A			
							B			
							C			
							A			
							B			
							C			
							A			
							B			
							C			
							A			
							B			
							C			

DEBIT			CREDIT			LOADING NO.	PACKED BY				COST
			BRANCH				NH				A
NT	BRANCH	SUB.	ACCOUNT	BRANCH	SUB.	AMOUNT	BRANCH INVOICE NO.	FILLED BY	CHECKED BY	BILL OF LADING NO.	B
							BR. INVOICE DATE	CAR NO. AND INITIALS		PARCEL POST CHG. $	C

CKING LIST COPY

CIRCLED ENTRIES INDICATE PARTIAL SHIPMENT. REMAINDER BACK ORDERED.

(3)

INTERNAL TRANSFER CHARGE

2605 REV. 9-73

USS OILWELL
Division of United States Steel Corporation

MURPHY OIL CORP.

MURPHY OIL CORP.
C/O OILWELL DIV.
WILLISTON, NORTH DAKOTA

6-20-75

CREDIT APPROVED

REQUISITION OR IHO NO. 3209-T-8827

DATE 6/19/75

COST CODES	BRANCH NO.	ITC NO.
A-Inventory B-Other Operating Cost C-Whse and Shipping Cost		

SHIP CHEAPEST WAY UNLESS OTHERWISE SPECIFIED BELOW:

FREIGHT [X] P.P. [ ]

QUOTATION AND DATE

CUSTOMER ORDER NUMBER: B 435

LEASE OR LOCATION AND WELL NO.: EPUSW #3

SHIPPED FROM

DATE SHIPPED

PREPAID [ ] COLLECT [ ]

F.O.B.

SALES OR USE TAX RATE CODE

STATE CODE TO 83 FROM 73

ENTITY PPED	UNIT	COMMODITY NO.	STANDARD DESCRIPTION	SOURCE QUAN.	SOURCE LOCATION	RATIO	CODE	UNIT COST	EXTENSION	TAX COD
3	EA	08441026	EXTENSION ROD 21-423-18	✓	97		A B C			22
1	EA	08466008	PACKING ✓ 21-423-20	✓	97		A B C			
1	EA	08441027	BAFFLE ✓ 21-423-19	✓	97		A B C			
3	EA	899094087	CALMP 21-416-20	✓	97		A B C			
2	EA	08406001	GASKET 21-422-03	✓	97		A B C			
1	EA	08416078	VALVE DISC. ✓ 21-423-04		97		A B C			
1	EA	08427003	GASKET 21-423-15		97		A B C			
1	EA	20900016	VALVE ASSEMBLY 21-435-065		97		A B C			

DEBIT BRANCH	DEBIT SUB.	CREDIT BRANCH	CREDIT ACCOUNT	CREDIT BRANCH	CREDIT SUB.	LOADING NO.	PACKED BY				COST
						AMOUNT	BRANCH INVOICE NO.	FILLED BY	CHECKED BY	BILL OF LADING NO	A
							BR. INVOICE DATE	CAR NO. AND INITIALS		PARCEL POST CHG. $	B
											C

CIRCLED ENTRIES INDICATE PARTIAL SHIPMENT, REMAINDER BACK ORDERED

IG LIST COPY

3

INTERNAL TRANSFER CHARGE

IM 2605 REV. 9-73

USS OILWELL
Division of United States Steel Corporation

MURPHY OIL CORP.

MURPHY OIL CORP.
C/O OILWELL
WILLISTON, NORTH DAKOTA

OR: 6-20-75

CREDIT APPROVED

REQUISITION OR IHO NO. 3209-T-8827

DATE 6/19/75

COST CODES	BRANCH NO.	ITC NO.
A-Inventory B-Other Operating Cost C-Whse and Shipping Cost		

SHIP CHEAPEST WAY UNLESS OTHERWISE SPECIFIED BELOW:

FREIGHT [X] P.P. [ ]

QUOTATION AND DATE

CUSTOMER ORDER NUMBER: B435

LEASE OR LOCATION AND WELL NO.: EPUSW # 3

SHIPPED FROM

DATE SHIPPED

PREPAID [ ] COLLECT [ ]

F.O.B.

SALES OR USE TAX RATE CODE

STATE CODE: TO 83 FROM 73

QUANTITY SHIPPED	UNIT	COMMODITY NO.	STANDARD DESCRIPTION		SOURCE QUAN.	SOURCE LOCATION	RATIO	CODE	UNIT COST	EXTENSION	TAX COD
3	EA	08435000	CROSSHEAD	14-222-06		97		A			
								B			
								C			
1	EA	08017024	GASKET	21-420-05	✓	97		A			
								B			
								C			
1	EA	08412103	4 ½ CERMIC PLUNGERK	21-422-17	✓	97		A			
								B			
								C			
								A			
								B			
								C			
								A			
								B			
								C			
								A			
								B			
								C			
								A			
								B			
								C			
								A			
								B			
								C			

DEBIT			CREDIT			LOADING NO.	PACKED BY			COST
CH			BRANCH							A
COUNT	BRANCH	SUB.	ACCOUNT	BRANCH	SUB.	AMOUNT	BRANCH INVOICE NO.	FILLED BY	CHECKED BY	BILL OF LADING NO.	B
							BR. INVOICE DATE	CAR NO. AND INITIALS		PARCEL POST CHG. $	C

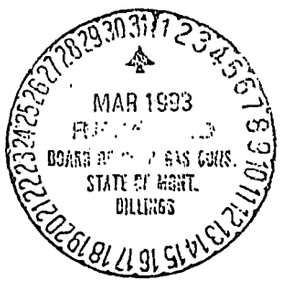
CIRCLED ENTRIES INDICATE PARTIAL SHIPMENT, REMAINDER BACK ORDERED

PACKING LIST COPY

(3)

WATERSAVER COMPANY, INC.
3560 WYNKOOP STREET • DENVER, COLORADO 80216 • (303) 623-4111

Data Sheet SORV - 72



SPECIFICATION

Physical Properties For

OIL RESISTANT VINYL (P.V.C.)

	.020 Gauge	.030 Gauge
Tensile	L 2950 T 2600	2800 2450
Elongation %	L 440 T 460	520 520
Modulus 100% PSI	L 1150 T 1050	1050 950
Greves Tear PSI	L 290 T 300	290 300
Water Extraction	.70% Gain	.36% Gain
Volatility	.97%	.65%
Cold Crack	+ 10° F	
Specific Gravity	1.29	
Color	Grey or Black	

These typical property values are intended as a guide and are not specification limits.

TUBING RECORD

WELL NAME & NO.	FIELD	DISTRICT
EPU # 80-D	East Poplar	RM

K. B. ELEVATION	SETTING DATE	DISTANCE K. B. TO CASING HEAD FLANGE	AFE NO.
2069'	August 3, 1984	8.00'	

TUBING STRING DESIGN

JOINTS	COND.	SIZE	DESCRIPTION	FEET
98	1		2 7/8', 6.50#, J-rr, 8rd., EUE Tubing	3189.93
1	1		Arrowset Packer	6.93
3	1		2 7/8", 6.50#, J-55, 8rd., EUE Tubing	97.61
		TOTAL		3294.47

LANDED BELOW R. K. B.	6.50
LANDED AT	3300.97

PERFORATIONS AT
Dakota Sand @ 3218'-3250', 3284'-3410', 3462'-3512'

TAIL PIPE DESCRIPTION
3 joints 2 7/8" coated tubing

PACKER	MANUFACTURER	SIZE	WEIGHT	TYPE	MODEL
	I.D.	LENGTH	TOP SET @	BOTTOM SET @	TYPE " J " ASSEMBLY

CHOKES/SEATING NIPPLES:

SPECIAL EQUIPMENT DESCRIPTION:

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593 — BILLINGS, MONTANA — 20 N. 31ST ST

WATER ANALYSIS REPORT

Lab. No. 1169-W

Field East Poplar — County Roosevelt — State Montana
Well No. 80 Unit — Location C SW NW 3-28N-51E
Formation "B-2" Zone — Depths 5654.5-5659'
Operator Murphy Corporation — Date Sampled 7-19-56
DST No. 1 — Sample — Date Analyzed 8-8-56
Other Data Tool open 2 hrs. SI 20 min. Recovered 2051' gas, 273' clean oil, 182' oily muddy salt water and 1647' salt water. FP 112-1745 lbs., SIP 2988 lbs., HP 3260 lbs. Sample clear colorless water with H_2S present.

Constituents	PPM	MEQ.	MEQ. %
Sodium	62,953	2738.27	48.72
Calcium	1148	57.29	1.02
Magnesium	180	14.80	0.26
Sulfate	5983	124.45	2.21
Chloride	101,430	2680.33	47.69
Carbonate	0	0	0
Bicarbonate	340	5.58	0.10

Total Solids in Parts per Million
By evaporation 175,000
After ignition 171,800
Calculated 171,862

pH 7.0

Specific Gravity @ 60°F 1.114

Resistivity @ 68°F
ohms/meter³ 0.057

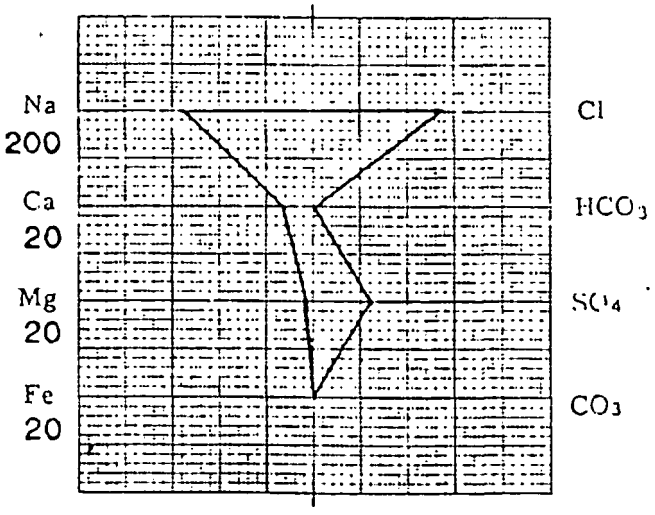
Chloride as NaCl 167,258 PPM.

Total Solids From Resistivity as NaCl 168,918 PPM.

NOTE Sodium and potassium reported as sodium. MEQ. milliequivalents per liter. PPM parts per million (milligrams per liter). 1 PPM equivalent to 0.0501 ?

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



WESTERN LITHO-PRINT, INC., BILLINGS, MONT.

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593 — BILLINGS, MONTANA — 20 N. 31st St.

WATER ANALYSIS REPORT

Lab. No 1170-W

Field East Poplar — County Roosevelt — State Montana
Well No. 80 Unit — Location C SW NW 3-28N-51E
Formation "B-1" Zone — Depths 5634-46'
Operator Murphy Corporation — Date Sampled 7-20-56
DST No. 2 — Sample Top of Tool — Date Analyzed 8-8-56
Other Data Tool open 2 hrs. SI 20 min. Recovered 546' gas, 30' clean oil, 60' oil and gas-cut mud and 800' salt water. FP 30-440 lbs., SIP 2555 lbs., HP 3260 lbs. Sample clear colorless water.

Constituents	PPM	MEQ.	MEQ. %
Sodium	96,273	4187.59	49.17
Calcium	1168	58.28	0.68
Magnesium	156	12.82	0.15
Sulfate	2728	56.74	0.67
Chloride	148,764	4195.14	49.25
Carbonate	0	0	0
Bicarbonate	415	6.81	0.08

Total Solids in Parts per Million
By evaporation 251,300
After ignition 248,200
Calculated 249,294

pH 7.2

Specific Gravity @ 60°F 1.160

Resistivity @ 68° F ohms/meter³ 0.049

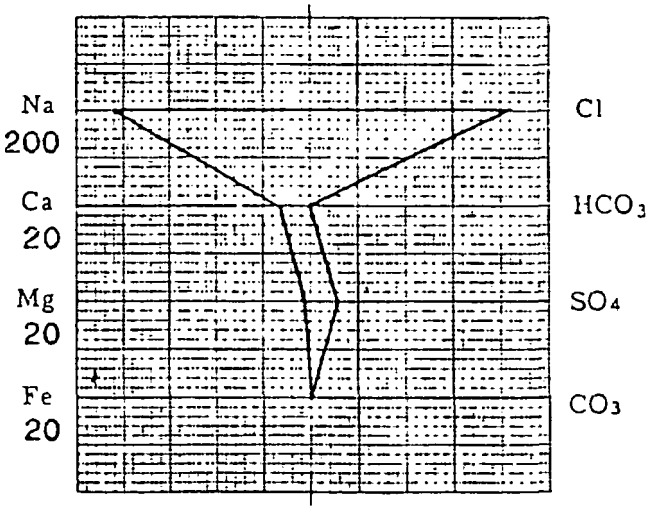
Chloride as NaCl 245,312 PPM.

Total Solids From Resistivity as NaCl 247,935 PPM.

NOTE: Sodium and potassium reported as sodium. MEQ. = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



SPECIALIZING IN CORE, WATER, GAS AND CRUDE OIL ANALYSES

WESTERN LITHO-PRINT, INC., BILLINGS, MONT.

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593 — BILLINGS, MONTANA — 20 N. 31st St.

WATER ANALYSIS REPORT

Lab. No. 1171-W

Field East Poplar — County Roosevelt — State Montana
Well No. 80 Unit — Location C SW NW 3-28N-51E
Formation "B-3" Zone — Depths 5669-5686'
Operator Murphy Corporation — Date Sampled 7-21-56
DST No. 3 — Sample Top of Tool — Date Analyzed 8-8-56
Other Data Tool open 2 hrs. SI 20 min. Recovered 795' salt water. No show of oil. FP 30-385 lbs., SIP 2935 lbs. Sample clear light amber colored water.

Constituents	PPM	MEQ.	MEQ. %
Sodium	62,432	2715.63	48.65
Calcium	1208	60.28	1.08
Magnesium	180	14.80	0.27
Sulfate	2874	59.78	1.07
Chloride	96,600	2724.12	48.81
Carbonate	0	0	0
Bicarbonate	415	6.81	0.12

Total Solids in Parts per Million
By evaporation 164,000
After ignition 161,700
Calculated 163,499

pH 7.3

Specific Gravity @ 60°F 1.111

Resistivity @ 68°F ohms/meter³ 0.60

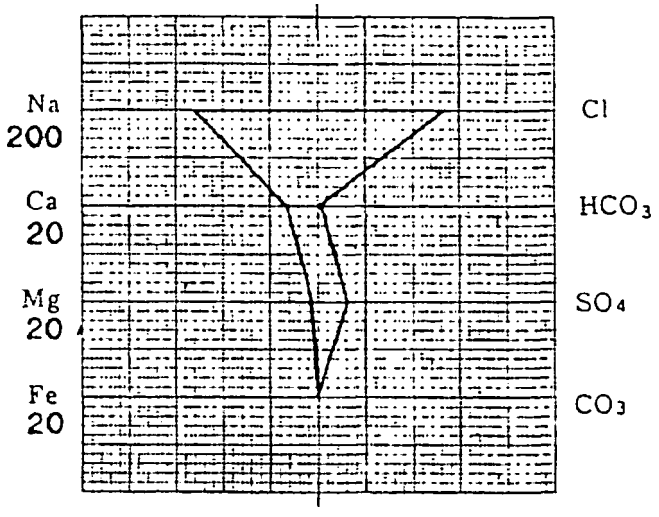
Chloride as NaCl 159,293 PPM.

Total Solids From Resistivity as NaCl 162,089 PPM.

NOTE: Sodium and potassium reported as sodium. MEQ. = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



WESTERN LITHO PRINT, INC., BILLINGS, MONT.

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593 — BILLINGS, MONTANA — 20 N. 31st St

WATER ANALYSIS REPORT

Lab. No. 1172-W

Field East Poplar — County Roosevelt — State Montana
Well No. 80 Unit — Location C SW NW 3-28N-51E
Formation Madison "C" Zone — Depths 5791.5-5808'
Operator Murphy Corporation — Date Sampled 8-23-56
DST No. 4 — Sample Top of Tool — Date Analyzed 8-8-56
Other Data Tool open 2 hrs. SI 20 min. Recovered 3367' salt water (muddy). FP 58-1582 lbs., SIP 3070 lbs., HP 3315 lbs. Sample muddy water. Filtrate clear and dark reddish colored.

Constituents	PPM	MEQ.	MEQ. %
Sodium	25,094	1090.53	46.12
Calcium	1643	81.99	3.47
Magnesium	120	9.86	0.41
Sulfate	4218	87.73	3.71
Chloride	38,640	1089.65	46.08
Carbonate	0	0	0
Bicarbonate	305	5.00	0.21

Total Solids in Parts per Million
By evaporation 70,300
After ignition 68,780
Calculated 69,865

pH 7.7

Specific Gravity @ 60°F 1.048

Resistivity @ 68°F
ohms/meter³ 0.12

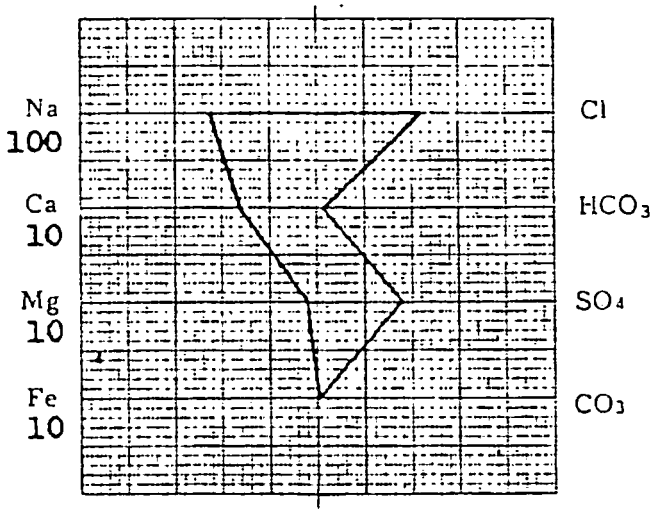
Chloride as NaCl 63,717 PPM.

Total Solids From Resistivity as NaCl 67,726 PPM.

NOTE: Sodium and potassium reported as sodium. MEQ = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



SPECIALIZING IN CORE, WATER, GAS AND CRUDE OIL ANALYSES

WESTERN LITHO-PRINT, INC., BILLINGS, MONT.

YAPUNCICH, SANDERSON & BROWN LABORATORIES

P. O. BOX 593 BILLINGS, MONTANA 20 N. 31st St.

WATER ANALYSIS REPORT

Lab. No. 1173-W

Field East Poplar County Roosevelt State Montana
Well No. 80 Unit Location C SW NW 3-28N-51E
Formation "A" Zone Depths 5485.5-5496'
Operator Murphy Corporation Date Sampled 7-25-56
DST No. 5 Sample Top of Tool Date Analyzed 8-8-56
Other Data Tool open 2 hrs. SI 20 min. Recovered 200' gas, 45' clean oil, 45' mud-cut oil and 130' salt water. FP 30-112 lbs., SIP 2990 lbs., HP 3152 lbs. Sample muddy water. Filtrate clear and dark reddish colored.

Constituents	PPM	MEQ.	MEQ. %
Sodium	40,737	1771.94	48.54
Calcium	1069	53.34	1.46
Magnesium	0	0	0
Sulfate	8925	185.64	5.09
Chloride	57,960	1634.47	44.77
Carbonate	96	3.20	0.09
Bicarbonate	120	1.97	0.05

Chloride as NaCl 95,576 PPM.

Total Solids in Parts per Million
By evaporation 108,920
After ignition 107,400
Calculated 108,846

pH 8.7

Specific Gravity @ 60°F 1.075

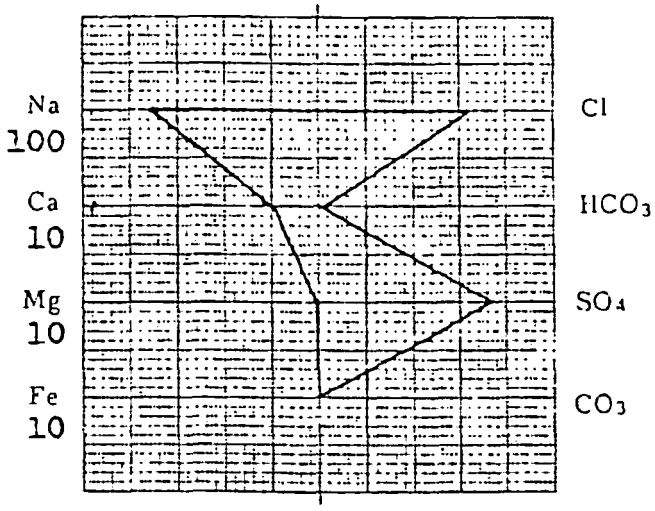
Resistivity @ 68°F ohms/meter³ 0.088

Total Solids From Resistivity as NaCl 104,329 PPM.

NOTE: Sodium and potassium reported as sodium. MEQ. = milliequivalents per liter. PPM = parts per million (milligrams per liter). 1 PPM equivalent to 0.0001%

WATER ANALYSIS PATTERN

Scale MEQ. Per Unit



SPECIALIZING IN CORE, WATER, GAS AND CRUDE OIL ANALYSES

WESTERN LITHO-PRINT, INC., BILLINGS, MONT.

Yapuncich, Sanderson & Brown Laboratories
Billings, Montana

P.O. Box 593 20 N 31st St

LARGE CORE ANALYSIS REPORT

OPERATOR Murphy Corporation FIELD East Poplar WELL NO. 80 Unit

LOCATION C SW NW 3-28N-51E COUNTY Roosevelt STATE Montana

FORMATION B-1, B-2 & B-3 Zones DEPTHS 5625-5689.0' DATE 7-25-56 LAB. NO 2742

Sample No.	Interval Feet	Footage	PERMEABILITY, Md. K Max.	K 90°	K Matrix	K Vertical	Total Porosity Per Cent	SATURATION % PORE SPACE Residual Oil	Water	Matrix Density		DESCRIPTION
			CORE NO. 1 5652-59' Cut 34' Rec. 33'									
	5625-35.5	10.5	-	-			-	-	-			Anhydrite
			B-1 Zone									
1	5635.5-35.8	0.3	0.9	0.4		0.4	7.2	Trace	100.0			
	5635.8-36.6	0.8	-	-		-	7.2	Trace	100.0		OVF	Similar to No. 1
2	5636.6-37.3	0.7	*	-	4.8	-	12.5	Trace	78.4			OVF
3	5637.3-38.2	0.9	5.9	4.0		2.2	4.2	Trace	81.0			VF Stylolite
	5638.2-38.5	0.3	-	-		-	4.2	Trace	81.0		OVF	Similar to No. 3
4	5638.5-39.3	0.8	3.7	2.1		2.4	6.4	Trace	39.1			
5	5639.3-40.2	0.9	4.8	1.6		15	7.6	14.5	61.8		VF	
6	5640.2-41.5	1.3	3.4	2.5		1.3	10.6	Trace	90.6			
	5641.5-42.5	1.0	-	-		-	-	-	-			Not Received
	5642.5-53.5	11.0	-	-		-	-	-	-			Anhydrite
			B-2 Zone									
7	5653.5-54.0	0.5	17	11		4.4	11.4	7.9	51.8			V
8	5654.0-55.2	1.2	7.4	5.6		7.4	17.4	Trace	50.3			
9	5655.2-55.7	0.5	13	11		6.4	16.7	8.4	54.5			
10	5655.7-56.3	0.6	2.6	2.5		1.7	10.6	1.9	66.0			
11	5656.3-58.0	1.7	9.3	6.1		9.3	15.2	11.2	48.0			
	5658.0-59.0	1.0	-	-		-	-	-	-			Not Recovered
			CORE NO. 2 5659-86' Cut 27' Rec. 30'									
12	5659.0-59.7	0.7	2.8	<0.1		3.1	16.7	1.2	61.1			
13	5659.7-60.4	0.7	6.3	4.4		2.2	9.5	Trace	100.0			

Yapuncich, Sanderson & Brown Laboratories
Billings, Montana

LARGE CORE ANALYSIS REPORT

Murphy Corporation
East Poplar Field, Roosevelt County, Montana
Well No. 80 Unit

SUMMARY OF REPORT

	B-1 Zone	B-2 Zone	B-3 Zone
Probable Production	Water	Oil & Water	Water
Estimated Recoverable Oil	-	800 bbls./acre	-
Productive Interval	5635½-41½'	5653½-69'	5675-81'
Porosity Thickness	6 feet	14½ feet	6 feet
Average Maximum Permeability	4.1 md.*	24 md.*	1.2 md.*
Average Porosity	7.9%	14.1%	15.4%
Average Oil Saturation	Trace - 14.5%	2.7%	Trace
Average Water Saturation	79.2%	73.6%	79.9%

*Average permeability does not include permeability of open fractures. B-1 Zone has 1.8' of open fractures; B-2 Zone 1.3' and B-3 Zone 0.4'.

Form Approved. OMB No. 2000-0042. Approval expires 9-30-8

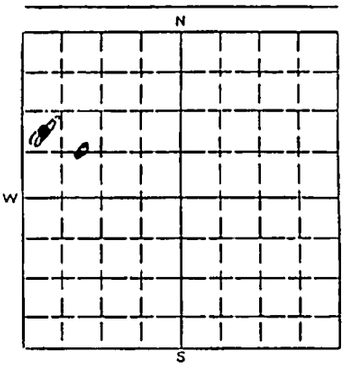
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Murphy Exploration & Prod. Co. P.O. Box 547 Poplar, MT 59255-0547	Diamond B Trucking, Inc. P.O. Box 567 Plentywood, MT

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	MTS2026-0026

SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	Total Depth After Rework 3575	☒ Individual ☐ Area Number of Wells 1
Lease Name	Date Rework Commenced	Well Number
East Poplar Unit	Date Rework Completed	80-D

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals
Mechanical Integrity Test Attached		

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	5-27-98

EPA Form 7520-12 (2-84)

Form Approved. OMB No. 2000-0042. Approval expires 9

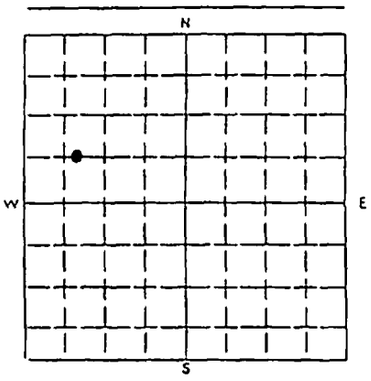
UNITED STATES ENVIRONMENTAL PROTECTION A[GENC]Y
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Murphy EXPRO P.O. Box 547 Poplar, MT 59255-0547	

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT	Roosevelt	MT[S]2026-0026

SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 1982 ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
[X] Brine Disposal [ ] Enhanced Recovery [ ] Hydrocarbon Storage	3575'	[X] Individual [ ] Area Number of Wells 1
Lease Name	Total Depth After Rework 3575'	Well Number
	Date Rework Commenced 9-10-98	
	Date Rework Completed 9-11-98	80-D

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals
Found tubing leak. Ran new packer and hydrotested tubing to 7000#		

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	Sept. 15, 1998

EPA Form 7520-12 (2-84)

For[illegible]pproved. OMB No. 2000-0042. Approval expires 9-30-8[illegible]

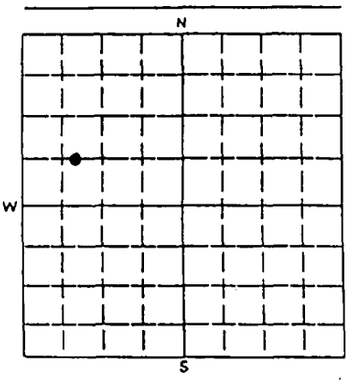
UNITED STATES ENVIRONMENTAL PROTECTION AGE[illegible]
WASHINGTON, DC 20460

EPA

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Murphy EXPRO. P.O. Box 548 Poplar, Mt 59255-0547	H & H Well Service P.O. Box 1244 Poplar, Mt. 59255-1244

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
MT.	Roosevelt	MTS 2026-0026

SURFACE LOCATION DESCRIPTION
¼ OF SW ¼ OF NW ¼ SECTION 3 TOWNSHIP 28N RANGE 51E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1982' ft. from (N/S) N Line of quarter section
and 761 ft. from (E/W) W Line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
☒ Brine Disposal ☐ Enhanced Recovery ☐ Hydrocarbon Storage	3575'	☒ Individual ☐ Area Number of Wells 1
Lease Name	Total Depth After Rework 3575'	Well Number
	Date Rework Commenced 5-4-99	
	Date Rework Completed 505099	80D

WELL CASING RECORD — BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

WELL CASING RECORD — AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

DESCRIBE REWORK OPERATIONS IN DETAIL USE ADDITIONAL SHEETS IF NECESSARY	WIRE LINE LOGS, LIST EACH TYPE	
	Log Types	Logged Intervals
Hydrotest tubing. Run and set packer.		

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
Raymond Reede District Manager	Raymond Reede	May 10, 1999

EPA Form 7520-12 (2-84)

Casing/Tubing Annulus
Pressure Test

Name of Company: Murphy Oil Corporation Date: 9/27/85

Name of Well: #80-D Permit No.:

Name of Field East Poplar County: Roosevelt

Location of Well: SW 1/4 NW 1/4 Sec. 3 T-20N R-57E

Type of Well: SWD X ER Total Depth: 5831 Ft.
3531 PBTD

Type of Packer: Arrow Set

Packer Setting Depth: 3190

Surface Casing Size: 13 3/8 / 9 5/8 From: 0 Ft. To 161 / 980 Ft.

Casing Size: 5 1/2 From: 0 Ft. To 5831 Ft.

Tubing Size: 2 7/8 Amount: 3190

Time of Test: 1:00 PM Pressure Gauge Reading:

0	Min:	650
5		625
10		625
15		610
20		610
25		610
30		600
35		600
40		600
45		600
50		
55		
60		

Passed Test
WE Engle

Inspected by: James Rowe

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

MECHANICAL INTEGRITY PRESSURE TEST
CASING/TUBING ANNULUS

Company Name: _____ Date: _____
Well Name: _____ Permit No. _____
Field Name: _____ County: _____
Well Location: _____ Sec _____ T _____ R _____
Well Type: SWD ✓ ER _____ 2H _____ Other: _____
Type of Packer: _____ Total Depth: _____
Packer Set at (depth): _____ FT
Surface Casing Size: _____ From: _____ FT to _____ FT
Casing Size: _____ From: _____ FT to _____ FT
Tubing Size: _____ Tubing Pressure during Test: _____ psig
Time of Day: _____ am/pm

	Test #1		Test #2	
0 Min:	_____	psig	_____	psig
5	_____	psig	_____	psig
10	_____	psig	_____	psig
15	_____	psig	_____	psig
20	_____	psig	_____	psig
25	_____	psig	_____	psig
30	_____	psig	_____	psig
35	_____	psig	_____	psig
40	_____	psig	_____	psig
45	_____	psig	_____	psig
50	_____	psig	_____	psig
55	_____	psig	_____	psig
60	_____	psig	_____	psig

Test Conducted by: _____
Inspected by: _____
Others Present: _____

EPA R8 3560-1A (8-89)

Original - Regional Office Copy
Yellow Copy - File Copy
Pink Copy - Operator Copy

Mechanical Integrity T. t
Casing or Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466

EPA Witness: Debbie Madison Date 5 / 21 /98 Time 8:30 am

Test conducted by: Ray Reede

Others present: Shane Corne Lloyd Ritland

Well:	EPU No. 80-D	Well ID:	MTS2026-0026
Field:	East Poplar Unit	Company:	Murphy EXPRO
Well Location:	SW NW Section 3, T28N, R51E	Address:	P.O. Box 547 Poplar, MT 59255

Time	Test #1	Test #2	Test #3
0 min	510 psig	psig	psig
5	510		
10	510		
15	510		
20	510		
25	510		
30 min	510		
35			
40			
45			
50			
55			
60 min			
Tubing press	psig	psig	psig
Result (circle)	Pass Fail	Pass Fail	Pass Fail

Signature of EPA Witness: _____

See back of page for any additional comments & compliance followup

Debbie Madison did not witness M.I.T. test on casing. She did witness a pump test with casing open

Mechanical Integrity Test
Casing or Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466

EPA Witness: _____ Date 9 / 11 / 98 Time 1:35 ~~AM~~

Test conducted by: Ray Reede

Others present: Terry Ross

Well: East Poplar Unit No. 80-D	Well ID: MT52026-0026
Field: East Poplar Unit	Company: Murphy EXPRO
Well Location: SW NW Section 3, T28N, 51E Roosevelt County	Address: P.O. Box 547 Poplar, MT 59255-054

Time	Test #1	Test #2	Test #3
0 min	600# psig	_____ psig	_____ psig
5	590#	_____	_____
10	585#	_____	_____
15	580#	_____	_____
20	577#	_____	_____
25	574#	_____	_____
30 min	570#	_____	_____
35	567#	_____	_____
40	563#	_____	_____
45	560#	_____	_____
50	_____	_____	_____
55	_____	_____	_____
60 min	_____	_____	_____
Tubing press	0 psig	_____ psig	_____ psig
Result (circle)	Pass Fail	Pass Fail	Pass Fail

Signature of EPA Witness: Jim Boyter w/EPA and Debbie Madison W/Fort Pec

See back of page for any additional comments & compliance followu

Tribal EPA gave verbal permission to restart w

Mechanical Integrity Test
Casing or Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466

EPA Witness: Deb Madison Date 5/5/99 Time 1:19 ~~am~~/pm
Test conducted by: H & H; Murphy Oil
Others present: Ray Reeder

Well: 80-D
Field: EPA
Well Location: SW, NW, Sec 3 T28N R51E Roosevelt Co.
Well ID: MT S2026-00026
Company: Murphy Oil USA
Address: Murphy P.O. Box 547 Poplar MT ~~59254~~ 59255

Time	Test #1	Test #2	Test #3
0 min	482 psig	_____ psig	_____ psig
5	482		
10	482		
15	482		
20	482		
25	482		
30 min	482		
35			
40			
45			
50			
55			
60 min			
Tubing press	_____ psig	_____ psig	_____ psig
Result (circle)	Pass Fail	Pass Fail	Pass Fail

Signature of EPA Witness: Ray Reeder

See back of page for any additional comments & compliance followup.

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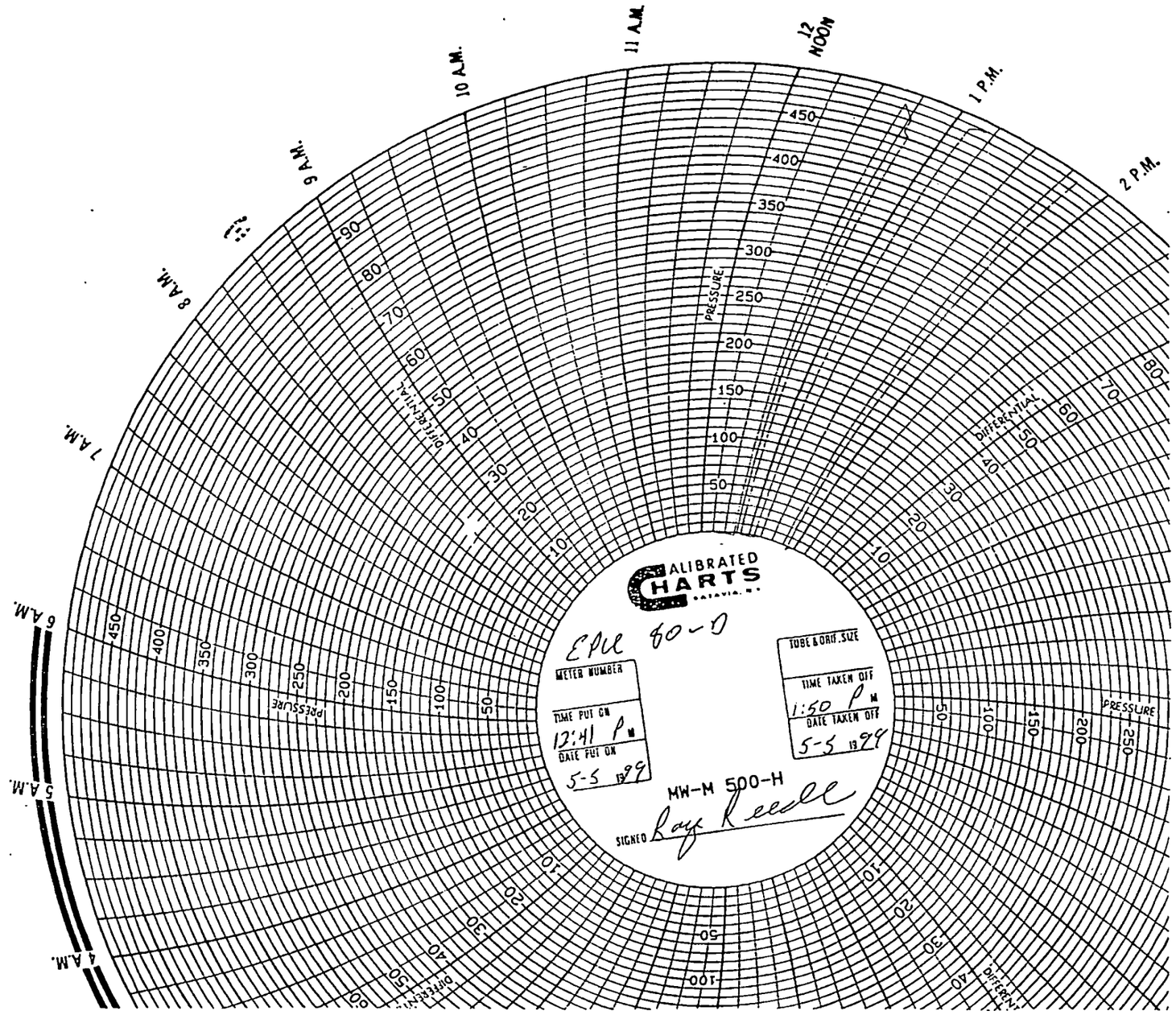

6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.
12 NOON
1 P.M.
2 P.M.
5 A.M.
4 A.M.
PRESSURE
DIFFERENTIAL
CALIBRATED CHARTS
BATAVIA, N.Y.
EPIC 80-D
METER NUMBER
TIME PUT ON
12:41 P M
DATE PUT ON
5-5 1999
TUBE & ORIF. SIZE
TIME TAKEN OFF
1:50 P M
DATE TAKEN OFF
5-5 1999
MW-M 500-H
SIGNED Ray Reese

Mechanical Integrity Test
Casing or Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466

EPA Witness: _____ Date___/___/ Time_____ a

Test conducted by: _____

Others present: _____

Well:	Well ID:
Field:	Company:
Well Location:	Address:

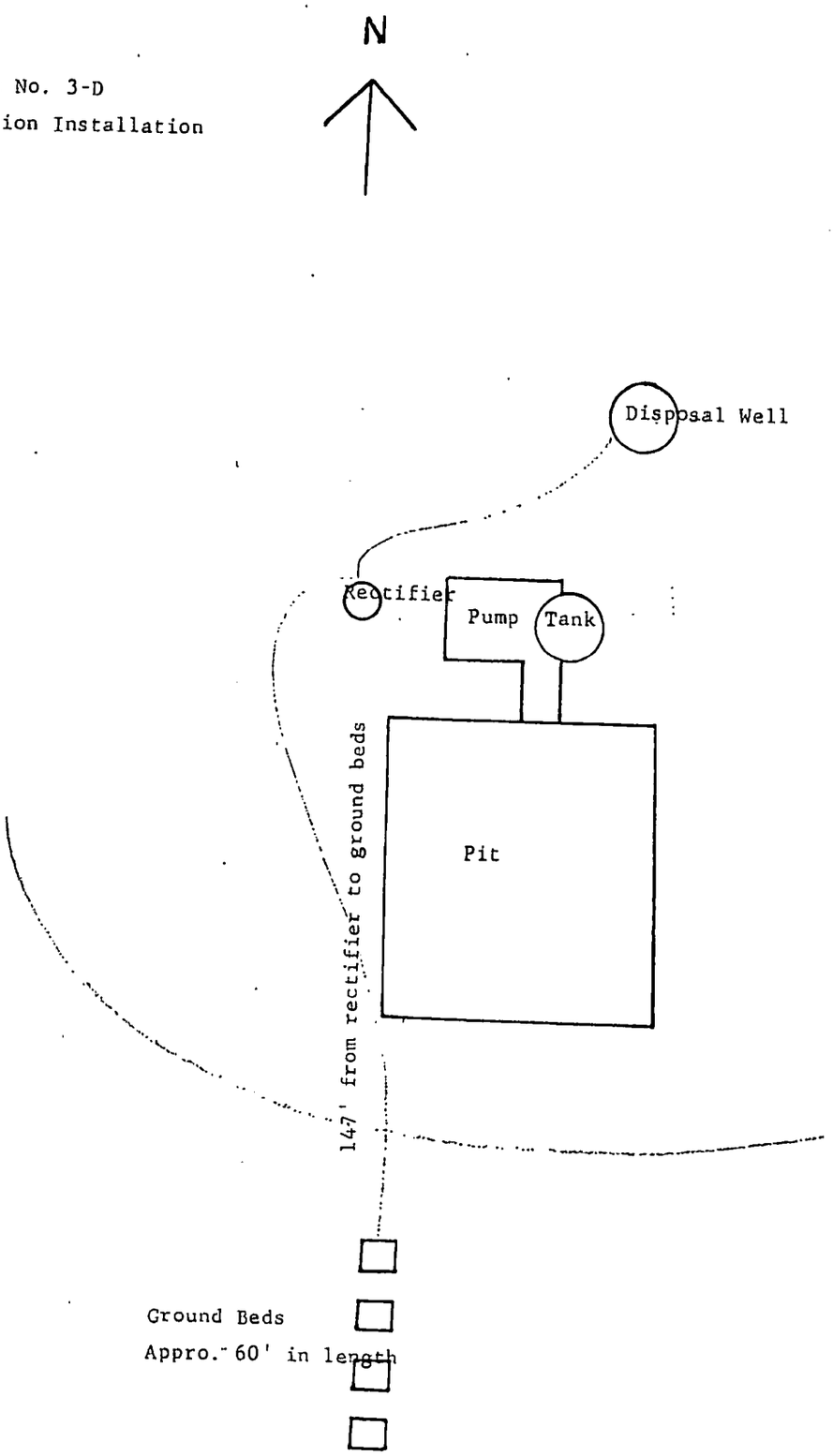
Time	Test #1	Test #2	Test #3
0 min	510 psig	_____ psig	_____ psig
5	510		
10	510		
15	510		
20	515		
25	5		
30 min			
35			
40			
45			
50			
55			
60 min			
Tubing press	_____ psig	_____ psig	_____ psig
Result (circle)	Pass Fail	Pass Fail	Pass Fail

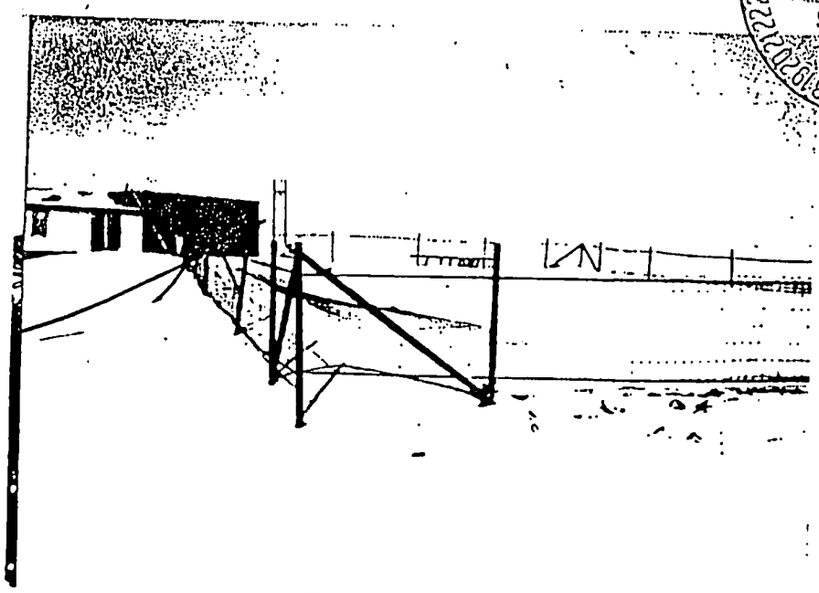
Signature of EPA Witness: _____

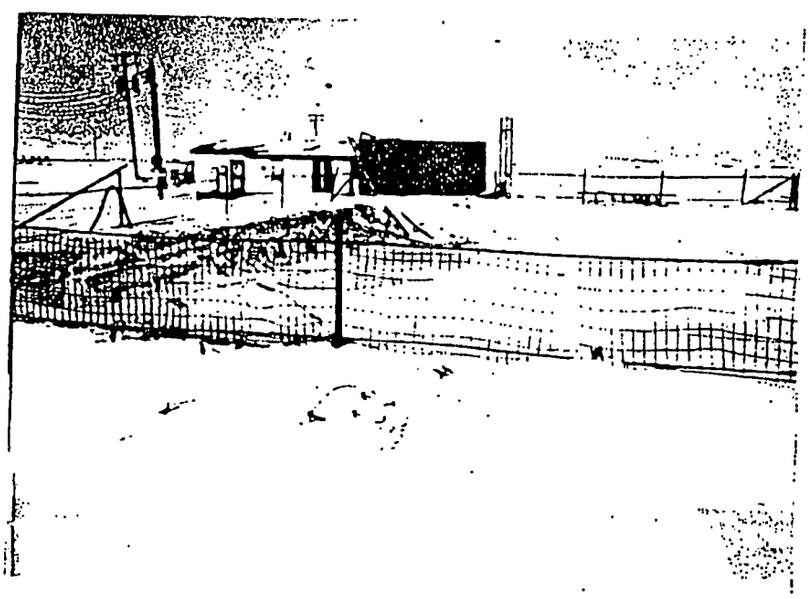
See back of page for any additional comments & compliance followup

PRODUCTION &
INJECTION DATA

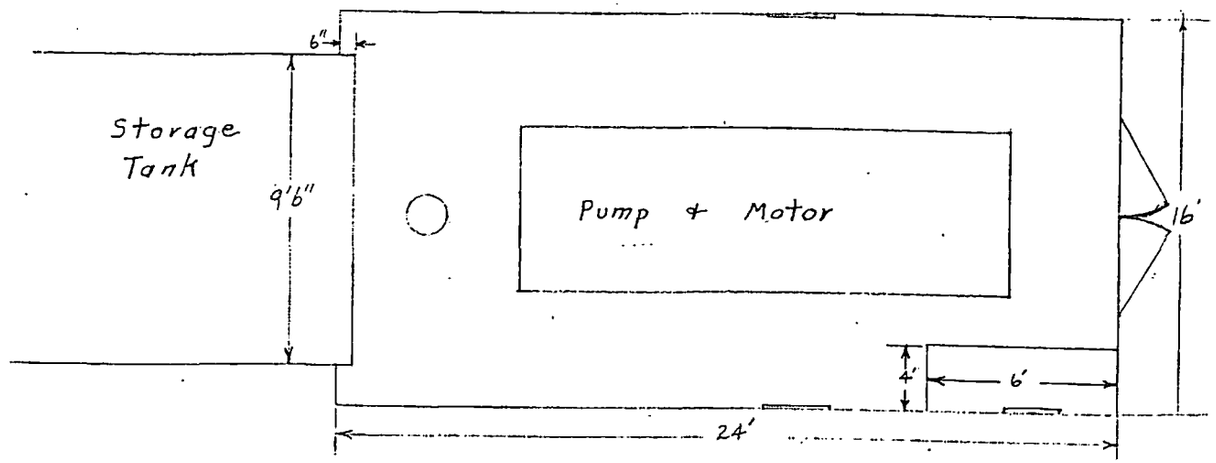
East Poplar Unit No. 3-D
Cathodic Protection Installation
July, 1980







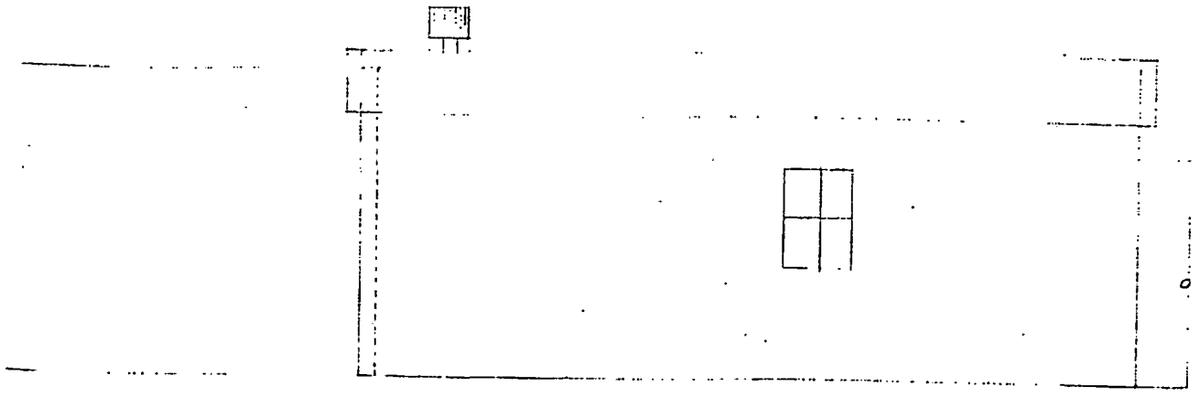
EPU 80-D



Plan View

28 Gauge C.G.I. Sheeting on exterior
2½" Blanket Insulation Walls & Ceiling
28 Gauge Flat G.I. Sheeting on interior
4 - 24" x 24" Double hung Windows
2"x 4" Studding on 18" centers
2"x 6" Trussed Roof
1 - 12" Leslie Turbine Ventilator
1 - 4' Sliding Door
1 - Double door for front of building

Building must be air tight around tank



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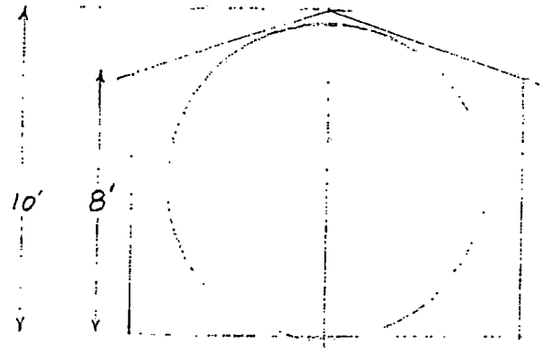
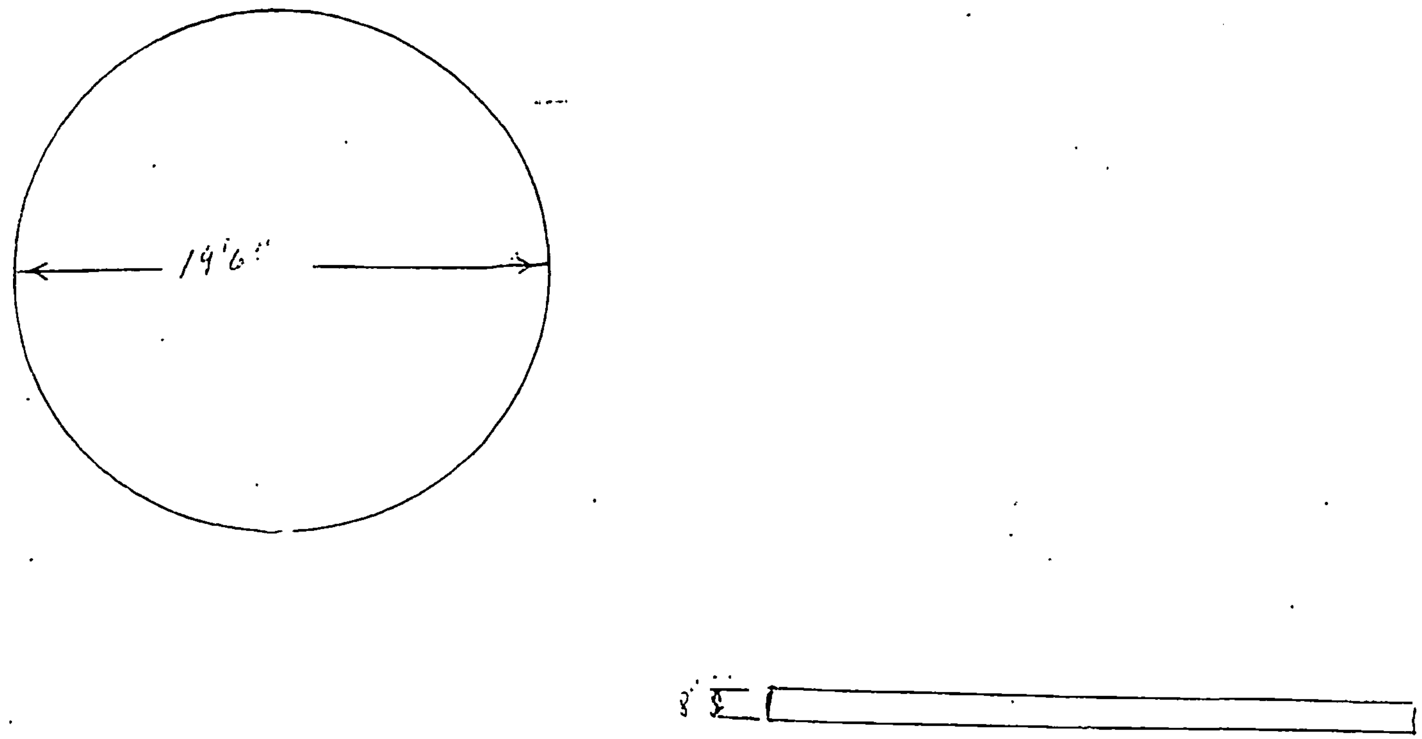




REVISIONS		
NO.	DATE	BY
1	1-24-72	
2		
3		
4		

19'6" DIAM. × 8" THICK
5-SACK CONCRETE FOUNDATION

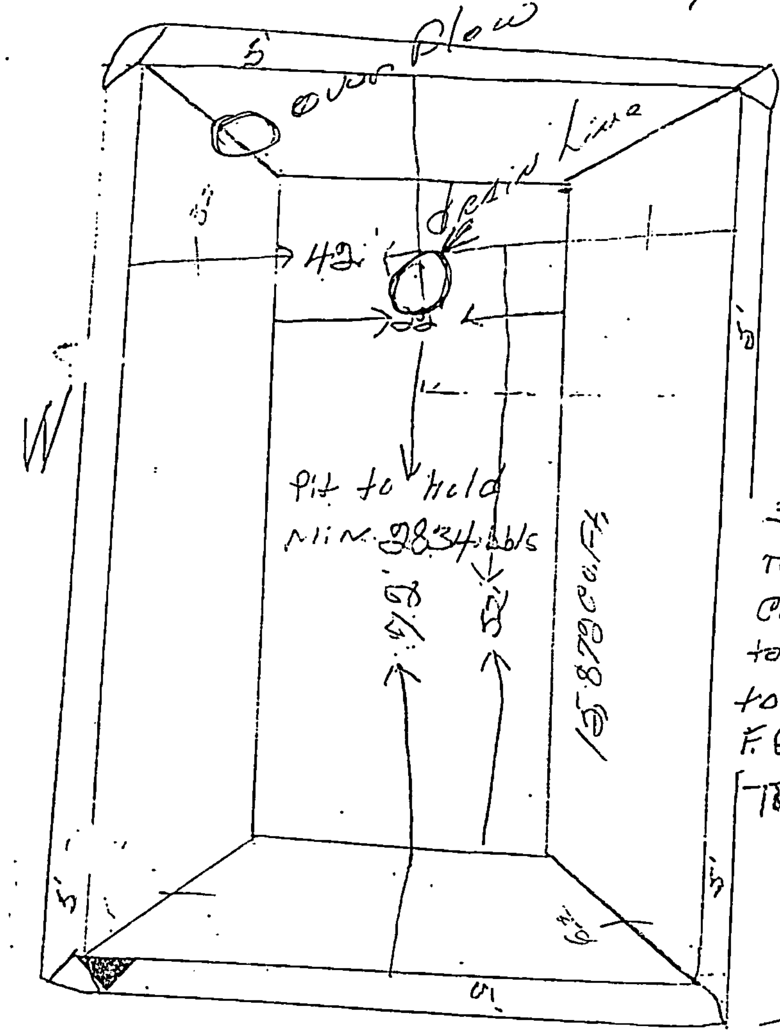
DRAWN BY	SCALE NO SCALE	MATERIAL
CHK'D	DATE	DRAWING NO.
TRACED	APP'D	

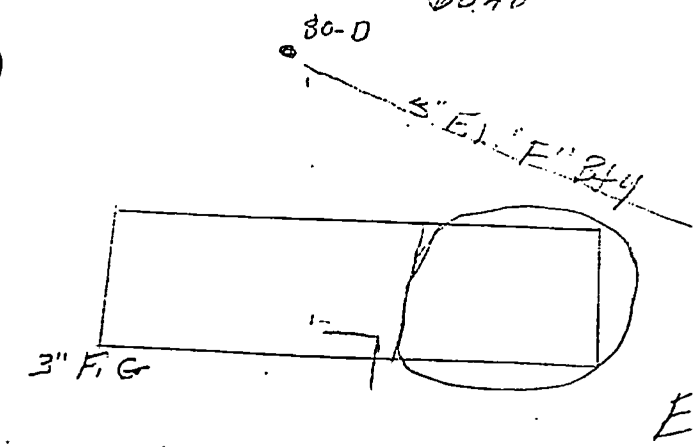
To:

Subject: E.P.U. S.W. Disp Station #80-D

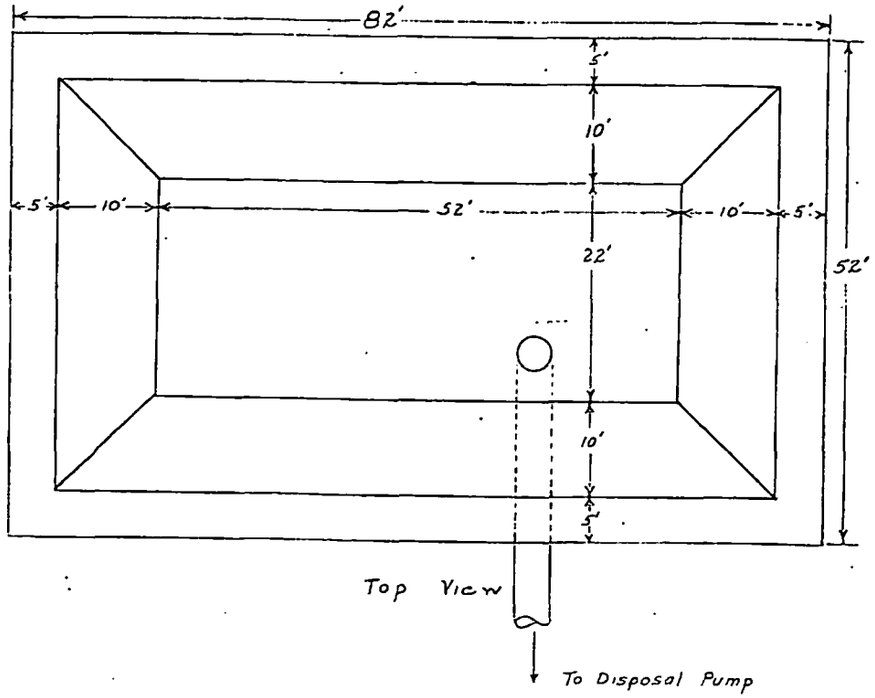
From:

Date: 8-9-71 30 mil. $0.40

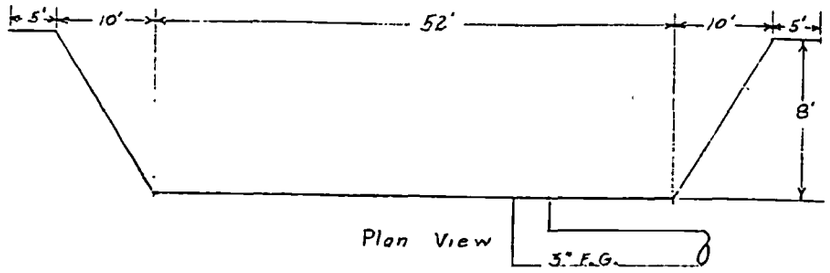


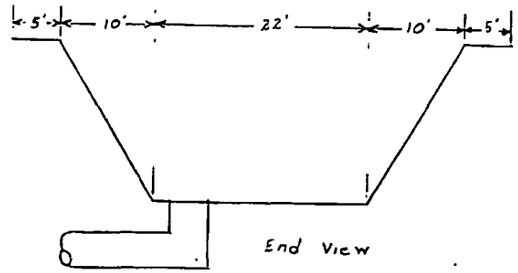


3" Fiber-Glass From Bottom Linned Pit to Inside Salt Wtr. station Connect to Pump Wtr. into weed tank. Connect to 3" Flow-Line to pump oil to "E" BH. Use 3" F.G. Line For over Flow From Weed Tk. to Pit


82'
5'
10'
5'
10'
52'
10'
5'
22'
52'
10'
5'
Top View
To Disposal Pump

42 x 72


5'
10'
52'
10'
5'
8'
Plan View
3" F.G.


5'
10'
22'
10'
5'
End View